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WASTE SOURCE AND WATER QUALITY STUDIES
SURF CITY, NORTH CAROLINA AND VICINITY
February - July 1975

U. S. Environmental Protection Agency
S&A Division
Athens, Georgia

NC Department of Natural and
Economic Resources
NC Department of Human Resources
Raleigh, North Carolina

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Study results revealed that septic tank systems degrade the quality of the shallow groundwater and contribute significant bacterial contamination to shellfish-growing waters via surface runoff. Surface ponding of septic tank leachates during periods of rainfall constitutes a sanitary nuisance and a potential health hazard.

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INTRODUCTION

The U. S. Environmental Protection Agency, Surveillance and Analysis Division and the North Carolina Departments of Natural and Economic Resources and Human Resources conducted waste source and water quality investigations in the vicinity of Surf City, North Carolina. These investigations were conducted from February to August 1975.

These investigations were conducted in response to a request for information made by the United States Attorney for the Eastern District of North Carolina. Primary study objectives were to:

- Collect background water quality data during a period of limited residential occupancy;
- Determine sources of bacterial contamination resulting in the closure of shellfish growing waters in the area;
- Evaluate the impact of septic tank leachates on groundwater quality and adjacent surface waters;
- Recommend alternatives to alleviate current water quality problems in the area.

We gratefully acknowledge the cooperation and assistance of the North Carolina Departments and residents in the study area in conducting these investigations.

SUMMARY AND CONCLUSIONS

Commercial and residential development in the Surf City-Old Settlers Beach areas has resulted in a proliferation of individual waste treatment systems. This development, with its dependence on septic tank treatment systems, has proceeded without the constraints of an area-wide waste treatment management plan and has resulted in the degradation of local surface and groundwater resources.

Continued dependence on septic tank treatment systems for area waste treatment needs will result in further degradation of area water resources. Ultimately, the economic viability of this water-oriented area will be jeopardized unless planning which allows for environmentally sound growth is soon initiated and implemented.

Inadequately treated municipal and industrial wastes from the Holly Ridge area impose significant waste loads on small receiving streams in the area. These waste sources should be included in area-wide pollution abatement plans.

The following summary and conclusions were derived from the study results:

SUMMARY

1. The U.S.P.H.S. and North Carolina coliform standard for shellfish harvesting waters was violated at all stations during the study period in February and July.
2. At five of six randomly selected septic tank systems where dye was injected, leachate was detected at the ground surface

following moderate to heavy rainfall. Total coliform densities measured in these surfacing leachates ranged from 14,100 to >2,400,000/100 ml and fecal coliform densities ranged from 460 to >2,400,000/100 ml.

3. Samples collected where dyed leachate (tinted with dye) was mixing with surface estuarine waters had total and fecal coliform densities ranging from 22,100 to >240,000/100 ml and 330 to 13,000/100 ml, respectively.

4. Fecal coliform densities at 12 groundwater test sites were generally ≤3/100 ml.

5. Dye injected into six septic tank systems was detected in five downgradient test wells within 69 to 82.5 hours following injection and was detected in adjacent surface waters within 70 to 94 hours following injection. Travel times were affected by rainfall and subsequent surfacing of leachate from septic tank systems and overland runoff to surface waters.

6. Maximum total phosphorus, total Kjeldahl nitrogen and total organic carbon concentrations of 12, 58 and 510 mg/l, respectively were measured in one groundwater well downgradient from septic tank systems.

7. Two major point source waste dischargers were identified in the study area. These are the Holly Ridge Sewage Treatment Plant (STP) and the Carolina Meat Processors plant located in the town of Holly Ridge.

8. The Holly Ridge STP discharges inadequately treated domestic waste into Kings Creek. Mean total and fecal coliform

densities measured in this effluent were 9,200,000 and 1,700,000/100 ml, respectively. Total Kjeldahl nitrogen and total organic carbon concentrations of 5.6 and 64 mg/l, respectively, were measured in this effluent.

9. Carolina Meat Processors discharges untreated process and sanitary waste into Cypress Creek. Mean total and fecal densities in this discharge, as measured approximately 1/4 mile downstream in a storm drainage ditch at Green Street, were 2,400,000 and 1,960,000/100 ml, respectively. Average total organic carbon, total phosphorus, and total Kjeldahl nitrogen concentrations were 1080, 124, and 28.0 mg/l, respectively.

10. Dissolved oxygen stratification was observed in canals at Old Settlers Beach during both February and July. Dissolved oxygen concentrations as low as 0.2 mg/l were measured at some canal stations.

CONCLUSIONS

1. The quality of shallow groundwater in the Surf City-Old Settlers Beach areas has been and is being degraded by septic tank leachates as shown by elevated nitrogen, phosphorus and organic carbon concentrations.
2. Recharge of the water-table aquifer during periods of moderate intensity rainfall causes water levels to rise in the water table and forces septic tank leachate onto land surface.
3. Dye studies indicate that septic tank systems in the study area can contribute significant bacterial contamination to nearby shellfish harvesting waters via surface runoff.
4. Surface ponding of septic tank leachates during periods of rainfall constitutes a sanitary nuisance and a potential health hazard through possible direct contact with these wastes.
5. The Holly Ridge STP and the Carolina Meat Processors discharges are significantly degrading water quality in Kings Creek and Cypress Creek.

RECOMMENDATIONS

1. Continued application of septic tank disposal systems in Surf City and Old Settlers Beach and other such high density costal developments, where soil and hydrological conditions prevent their effective operation, should be discontinued. These systems should be replaced with conventional treatment facilities. Future development in this area should proceed under a developed and implemented area-wide waste management plan.
2. The town of Holly Ridge must provide an adequate waste treatment facility to replace the present facility.
3. The Carolina Meat Processors plant, located at Holly Ridge must cease discharging untreated waste and provide adequate waste treatment.
4. New state regulations are needed to govern septic tank installation in coastal zones. These regulations must be predicated on the protection of area water resources and must take into account the unique hydrological features of these coastal areas.
5. Efforts should be made by both EPA and the North Carolina Department of Natural and Economic Resources to expedite the processing of the Holly Ridge and Surf City-Old Settlers Beach 201 plans in order that construction of adequate waste treatment facilities may be initiated as soon as possible.
6. Due to the serious shallow groundwater degradation, a central, treated drinking water supply should be considered for

the Old Settlers Beach area. Any use of private, shallow, water-table wells for drinking water should be discouraged.

STUDY AREA

General Description

The Surf City-Old Settler's Beach area of Pender and Onslow County, North Carolina, is a barrier island summer resort type development consisting primarily of cottages and mobile homes. Aquatic sports including swimming, boating, skiing and fishing are the primary attractions of the area. Fishing and shellfishing (oysters, clams, etc.) activities are also conducted in the area for market as well as private purposes.

The study area consisted primarily of the estuarine waters north of North Carolina Highway 50-210 to Kings Creek, including Batts Mill Creek and Kings Creek. Figure 1 depicts the study area along with water quality monitoring stations. A list of sampling station locations is contained in Appendix A.

Water Quality Classifications

Batts Mill Creek and the estuarine waters in the study area have been assigned Class "SA-Swampwater" classifications by the N. C. Environmental Management Commission. The best usage of Class "SA" waters is defined in the Environmental Management Commission's adopted "Rules, Regulations, Classifications, and Water Quality Standards Applicable to the Surface Waters of North Carolina" as being "shellfishing for market purposes and any other usage requiring waters of lower quality. Standards associated with Class "SA" waters are in accordance with standards recommended by the Federal Food and Drug Administration. Kings Creek has a Class "SC-Swampwater"

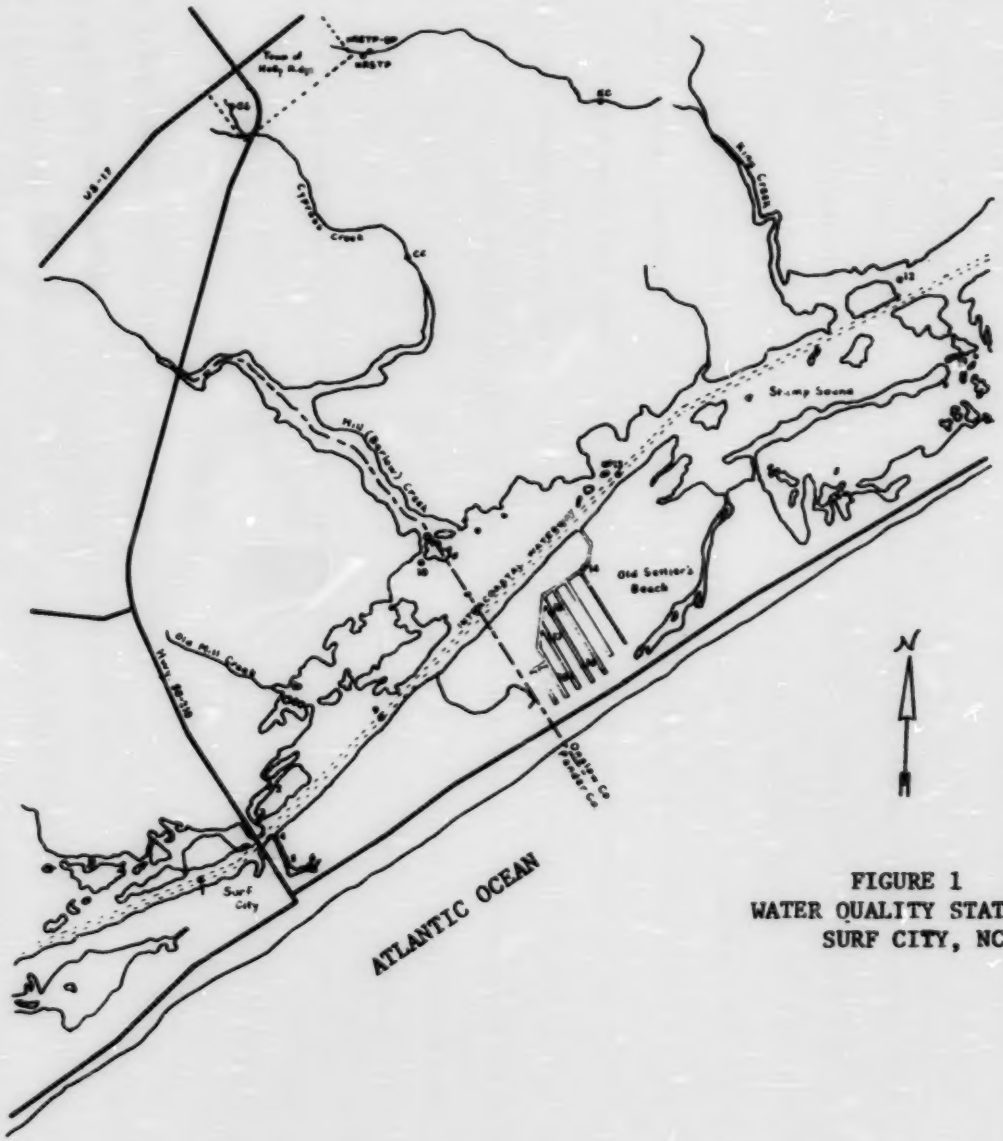


FIGURE 1
WATER QUALITY STATIONS
SURF CITY, NC

classification. Best usage of Class "SC" water is defined as "Fishing, and any other usage except bathing or shellfishing for market purposes." The Kings Creek area has been closed to shellfishing activities since 1944.

The North Carolina specific Water Quality Criteria for A" and "SC" waters are as follows:

Class SA Waters.

(1) Best usage of waters: Shellfishing for market purposes and any other usage requiring waters of lower quality.

(2) Conditions related to best usage: Waters will meet the sanitary and bacteriological standards given in the 1965 revision of the "National Shellfish Sanitation Program Manual of Operations: Part 1, Sanitation of Shellfish Growing Areas", recommended by the Public Health Service and will be considered safe and suitable for shellfish culture.

(3) Quality standards applicable to class SA waters.

(A) Floating solids; settleable solids; sludge deposits: None attributable to sewage, industrial wastes or other wastes.

(B) Sewage, industrial wastes, or other wastes: None which are not effectively treated to the satisfaction of the commission in accordance with the requirements of the Division of Health Services.

(C) pH: Range between 6.8 and 8.5.

(D) Dissolved oxygen: Not less than 5.0 mg/l, except that swamp waters may have a minimum of 4.0 mg/l.

(E) Toxic wastes; oil, deleterious substances, colored or other wastes: Only such amounts, whether alone or in combination with other substances or wastes as will not make the waters unsafe or unsuitable for fish and shellfish or their propagation, impair the palatability of same, or impair the waters for any other best usage established for this class.

(F) Organisms of coliform group: Total coliform group not to exceed a median MPN of 70/100 ml, and not more than 10% of the samples shall exceed a MPN of 230/100 ml for a 5-tube decimal dilution test (or 330/100 ml where a 3-tube decimal dilution is used) in those areas most probably exposed to fecal contamination during the most unfavorable hydrographic and pollution conditions.

(G) Temperature: Shall not be increased above the natural water temperature by more than 1.5°F. during the months of June, July, and August, nor more than 4.0°F. during other months, and in no case to exceed 90°F., due to the discharge of heated liquids.

Class SC Waters.

(1) Best usage of waters: Fishing and any other usage except bathing or shellfishing for market purposes.

(2) Conditions related to best usage: The waters will be suitable for fishing and fish propagation. Also, suitable for other uses requiring waters of lower quality.

(3) Quality standards applicable to class SC waters.

(A) Floating solids: settleable solids; sludge deposits: Only such amounts attributable to sewage, industrial wastes, or other wastes as will not, after reasonable opportunity for dilution and mixture of same with the receiving waters, make the waters unsafe or unsuitable for fish, shellfish, and wildlife, or impair the waters for any other best usage established for this class.

(B) pH; Shall be normal for the waters in the area, which generally shall range between 6.0 and 8.5, except that swamp waters may have a minimum of 4.3.

(C) Dissolved oxygen: Not less than 5.0 mg/l, except that swamp waters may have a minimum of 4.0 mg/l.

(D) Toxic wastes; oils; deleterious substances; colored or other wastes: Only such amounts, whether alone or in combination with other substances or wastes as will not render the waters injurious to fish and shellfish, adversely affect the palatability of same, or impair the waters for any other best usage established for this class.

(E) Organisms of coliform group: Fecal coliforms not to exceed a log mean of 1,000/100 ml (MPN or MF count) based upon at least five consecutive samples examined during any 30-day period; nor exceed 2,000/100 ml in more than 20% of the samples examined during such period. (Not applicable during or immediately following periods of rainfall.)

(F) Temperature: Shall not be increased above the natural water temperature by more than 1.5°F. during the months of June, July, and August, nor more than 4.0°F. during other months, and in no case to exceed 90°F., due to the discharge of heated liquids.

Climate, Hydrology and Soil Characteristics

The Study Area is characterized by warm, humid summers with maximum daytime temperatures reaching 90°F. or higher and relatively short, mild winters with average temperatures of approximately 40°F. The average annual rainfall in the area is approximately 50 inches with the greatest amount occurring in the summer and early fall months, often in the form of thunderstorms with high intensity. Winter rains are less intensive, but often last for several days at a time.

General soil associations in the study area include the Lumbee-Johns-Kalmia association on the west side of the Estuary and the Capers-Newhan association on the east side. The Lumbee-Johns-Kalmia association is characterized by the Soil Conservation Service's "General Soil Map for Pender County" as "Well to poorly drained soils with loamy subsoils on level to gently sloping terraces . . ". The Capers-Newhan association is described as "Very poorly drained to excessively drained, sandy to clayey, Marsh and Coastal dune soils on tidal flats and gently sloping areas near beaches and waterways along the coast . . .". Most of the land adjacent to the east side of the estuary is characterized by surface elevations of less than 10 feet and a corresponding high water table. A significant amount of

development in the Old Settler's Beach area is located where marsh areas have been dredged and filled.

HYDROGEOLOGIC FRAMEWORK

Surf City and Old Settler's Beach are underlain by sedimentary formations of Recent to Cretaceous age that lie on crystalline "basement" rocks. Depth to basement is approximately 1,300 feet below mean sea level (msl), or approximately 1,310 feet below land surface. The sedimentary formations above basement consist of beds of sand, clay, mixtures of sand and clay, and limestone.

The three principal hydrogeologic units in the study areas are the Quaternary water-table aquifer, the Tertiary limestone aquifer system, and the Cretaceous aquifer system. Uppermost, the unconfined Quaternary water-table aquifer is composed predominantly of sand from past dredge-and-fill operations. The artesian Tertiary limestone aquifer system is composed of limestone, and sand that occur immediately above or below the limestone. Occurring below the Tertiary limestone aquifer system and above basement rocks, the artesian Cretaceous aquifer system consists of interbeds of sand, clay, mixtures of sand and clay, and limestone.

WASTEWATER SOURCES AND CURRENT PLANNING

Two identified point-source wastewater discharges located in Holly Ridge were sampled during the study.

Carolina Meat Processors, a bacon processing plant, discharges approximately 30,000 gpd of untreated industrial and

sanitary wastewaters into Cypress Branch, tributary to Batts Mill Creek. The Company, which employs approximately 400 people, is planning to construct a land application system to treat both the industrial and sanitary wastes. Completion of the treatment facilities is expected by the Fall of 1976.

The town of Holly Ridge (1970 population, 415) discharges improperly treated municipal wastewater into Kings Creek. A draft waste management plan (Section 201, PL.92-500) describing the future treatment and disposal of the Town's wastewater has been submitted to the N. C. Division of Environmental Management. A detailed sewer system evaluation survey to determine the adequacy of the Town's sewage collection system with respect to infiltration and inflow has been completed. (Report submitted in February 1976.) The Final 201 Plan for the Holly Ridge Planning Area is expected to be submitted in 1976.

The Surf City-Old Settler's Beach area (1975 permanent population estimated-400, average seasonal population estimated-5,000 to 7,500) is densely developed, with dwelling units consisting primarily of mobile homes. Individual septic tank-nitrification field-type systems are utilized for wastewater disposal. Surf City and Old Settler's Beach, along with Topsail Beach are located in a single 201 Planning Area. A draft copy of the completed 201 Plan is expected to be submitted to the N. C. Division of Environmental Management by the summer of 1976.

Land use plans for Holly Ridge, Surf City, and the Old Settlers Beach area are also being prepared in accordance with

the N. C. Coastal Area Management Act. Completion of these plans is expected in 1976.

STUDY RESULTS

SURFACE WATER QUALITY

Mid depth water quality samples were collected at fifteen surface water stations during two intensive studies in February and July. Selected stations were monitored once per month during March, April and June. Station locations are shown in Figure 1. Chemical data are summarized in Table I and contained in Appendix A.

Nitrogen and Phosphorus

During the study period, average total Kjeldahl nitrogen (TKN) concentrations were slightly higher at the canal stations (Stations 2-6, range of averages 0.27 mg/l - 0.35 mg/l) and finger canal stations (Stations 14-18, range of averages 0.28 mg/l - 0.38 mg/l) than at the Atlantic Intracoastal Waterway Stations (AIWW) (Stations 1, 9 and 13, range of averages 0.19 mg/l - 0.34 mg/l). The maximum TKN concentration observed during the study period was 0.81 mg/l at finger canal station 18 in February. The maximum TKN concentration measured at the AIWW stations in February was 0.30 mg/l at station 9.

Concentrations of NO_2-NO_3 were generally low at all canal and AIWW stations. Maximum NO_2-NO_3 concentrations were observed at canal station 6 (0.17 mg/l) in March and at station 12 (0.12 mg/l), located at the mouth of Kings Creek, in February. The above average concentrations noted at station 12 apparently result from wastes discharged to Kings Creek from the Holly Ridge Sewage Treatment Plant (STP). Although Kings Creek and Holly

TABLE I
SUMMARY OF PHYSICAL AND CHEMICAL
SURFACE WATER DATA
February through July, 1975

Station Number		Water Temp. °C	Dissolved Oxygen mg/l	pH Units	Salinity °/oo	Total Kjeldahl-N mg/l	NO_2-NO_3-N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l
1	# Samples	186	177	17	186	14	14	14	14	16
	Maximum	28.5	9.2	8.5	35.5	.50	.01	.19	1.23	53.0
	Minimum	13.0	4.6	7.6	21.0	.18	.01K	.03K	.05	4.0K
	Average	23.1	6.7	8.1	31.2	.34	.03	.08	.20	19.4
2	# Samples	100	91	17	98	14	14	14	14	16
	Maximum	29.0	8.7	8.5	35.0	.60	.02	.18	.44	9.0
	Minimum	12.5	4.0	7.1	19.3	.16	.01K	.03K	.04	4.0K
	Average	21.8	6.9	7.9	29.2	.35	.03	.07	.10	13.2
3	# Samples	71	63	17	71	15	15	15	15	16
	Maximum	28.8	8.8	8.6	35.4	.60	.05	.13	.11	9.3
	Minimum	13.0	4.0	7.7	19.5	.15	.01K	.03K	.04K	4.5K
	Average	22.7	6.7	8.0	30.3	.34	.04	.06	.07	12.8
4	# Samples	61	53	17	61	15	15	15	15	16
	Maximum	30.0	10.2	8.6	35.2	.40	0.02	.10	.12	6.5
	Minimum	12.5	4.5	7.6	18.7	.14	.01K	.03K	.04K	4.0K
	Average	22.8	6.9	8.1	30.4	.27	.04	.06	.07	12.5
5	# Samples	65	57	17	65	15	15	15	15	16
	Maximum	29.0	9.8	8.5	35.2	.40	.02	.09	.13	7.5
	Minimum	13.0	4.4	7.6	17.0	.14	.01K	.03K	.04K	4.0K
	Average	22.8	6.8	8.0	30.2	.27	.04	.06	.06	12.6
6	# Samples	53	45	17	53	15	15	15	15	16
	Maximum	30.0	9.3	8.5	35.0	.50	.17	.08	.19	11.0
	Minimum	13.0	4.0	7.5	18.0	.19	.01K	.04K	.05K	5.1K
	Average	22.9	6.6	8.0	29.8	.29	.05	.06	.08	13.3
9	# Samples	167	159	17	167	15	15	15	15	16
	Maximum	28.3	9.4	8.5	35.5	.4	.02	.05	.11	7.5
	Minimum	14.0	4.6	7.6	18.0	.14	.01K	.04K	.04K	3.1K
	Average	22.6	6.8	8.0	29.8	.26	.04	.05	.06	12.6

SUMMARY OF PHYSICAL AND CHEMICAL
SURFACE WATER DATA - February through July, 1975 (continued)

Station Number		Water Temp. °C	Dissolved Oxygen mg/l	pH Units	Salinity °/oo	Total Kjeldahl-N mg/l	NO_2-NO_3-N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l
13	# Samples	125	117	5	125	6	6	6	6	8
	Maximum	29.0	9.2	7.9	35.0	.22	.02	.06	1.08	9.7
	Minimum	13.0	5.9	7.6	15.4	.15	.01K	.02	.05	4.7
	Average	22.0	7.5	7.8	28.3	.19	.01	.04	.26	6.4
14	# Samples	91	81	15	91	16	16	16	16	17
	Maximum	29.3	9.0	8.6	35.3	.31	.02	.03	.19	8.7
	Minimum	12.3	4.2	7.8	18.0	.19	.01K	.01K	.05K	4.5K
	Average	22.8	7.5	8.1	29.1	.28	.03	.04	.09	12.9
15	# Samples	125	116	16	125	15	15	15	15	16
	Maximum	29.3	9.6	8.6	34.3	.40	.01	.04	.32	7.7
	Minimum	11.7	0.4	7.5	18.0	.19	.01K	.03K	.05K	5.7K
	Average	22.6	7.2	8.1	28.9	.30	.03	.04	.09	13.4
16	# Samples	150	141	17	150	16	16	16	16	17
	Maximum	28.3	11.6	8.6	34.0	.40	.01	.08	.13	8.2
	Minimum	11.4	.2	7.7	18.5	.20	.01K	.02K	.05K	6.0K
	Average	22.9	6.1	8.1	29.7	.31	.03	.05	.08	13.0
17	# Samples	113	104	7	113	7	7	7	7	9
	Maximum	29.9	9.8	8.2	34.2	.35	.01	.04	.13	9.3
	Minimum	11.8	0.2	7.6	18.7	.19	.01K	.03K	.07	6.2
	Average	22.8	6.5	7.9	29.4	.30	.01	.03	.11	7.2
18	# Samples	99	90	7	99	7	7	7	7	9
	Maximum	28.8	10.2	8.2	34.0	.81	.01	.05	.39	16.0
	Minimum	11.6	0.2	7.5	18.6	.24	.01K	.03	.12	6.0
	Average	22.9	6.5	7.8	29.4	.39	.01	.04	.18	7.9
GS	# Samples	1			1	2	2	2	2	2
	Maximum					36.8	5.05	7.2	149.0	1800
	Minimum					19.2	.54	6.7	99.0	360
	Average					28.0	2.79	6.95	124.0	1080

SUMMARY OF PHYSICAL AND CHEMICAL
SURFACE WATER DATA - February through July, 1975 (continued)

Station Number		Water Temp. °C	Dissolved Oxygen mg/l	pH units	Salinity °/oo	Total Kjeldahl-N mg/l	NO_2-NO_3-N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l
KC	# Samples	1			1	2	2	2	2	2
	Maximum					.77	1.61	.30	.89	13.3
	Minimum					.42	1.25	.23	.70	12.5
	Average					.59	1.43	.26	.79	12.9
CC	# Samples	1			1	2	2	2	2	2
	Maximum					18.4	.50	15.20	25.60	14.3
	Minimum					7.55	.49	.29	25.00	13.8
	Average					12.97	.49	7.74	25.3	14.0

Ridge STP were not sampled during February, NO_2-NO_3 concentrations of 1.25 mg/l and 1.61 mg/l were measured in July at Station KC, located approximately 1.5 miles downstream from the Holly Ridge discharge and approximately 1.5 miles upstream of station 12. TKN concentrations at the Holly Ridge STP and Holly Ridge STP - Bypass (HRSTP-BP) were measured at 5.65 mg/l and 6.80 mg/l, respectively, in July. The maximum NO_2-NO_3 concentration observed in the study area was 5.05 mg/l in July at station GS, located on Cypress Creek at Green Street below Carolina Meat Processors discharge in Holly Ridge.

Generally, the AIWW stations exhibited higher total phosphorus concentrations than the canal stations. Average total phosphorus concentrations at the AIWW stations ranged from 0.06 mg/l to 0.26 mg/l while average concentrations at canal stations 2-6 ranged from 0.06 mg/l to 0.1 mg/l and at finger canal stations 14-18 average concentrations ranged from 0.08 mg/l to 0.18 mg/l. Maximum total phosphorus concentrations of 1.23 mg/l and 1.08 mg/l were found at AIWW stations 1 and 13, respectively, in July. These elevated total phosphorus concentrations in the AIWW may be attributed to the wastewater sources discharging into Kings Creek and Cypress Creek. Total phosphorus concentrations of 4.7 mg/l and 3.0 mg/l were measured in the discharges from the Holly Ridge STP and Holly Ridge STP-Bypass in July. A concentration of 149.0 mg/l was measured at station GS downstream from Carolina Meat Processors plant in Holly Ridge.

Other estuarine areas have experienced algal blooms with total phosphorus and total nitrogen concentrations in excess of

0.01 and 0.6 mg/l respectively. Sufficient nutrients were present in a number of the canal stations to support algal populations as indicated by the dissolved oxygen maxima and minima.

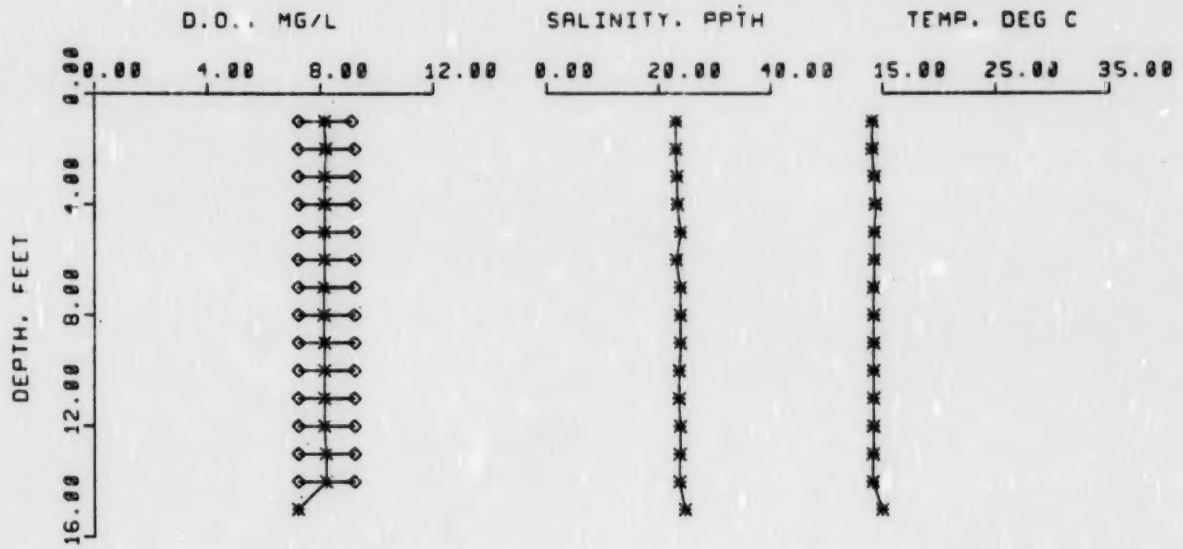
Dissolved Oxygen, Salinity and Temperature Profiles

Dissolved oxygen, salinity and temperature (DST) profiles provide a basis for comparing water quality with respect to depth. Diel profiles provide a basis for comparing water quality with respect to both time and depth. Dissolved oxygen, salinity and temperature profiles were measured at all water quality stations during February and July. These data are contained in Appendix A and are depicted in Figures 2 through 14.

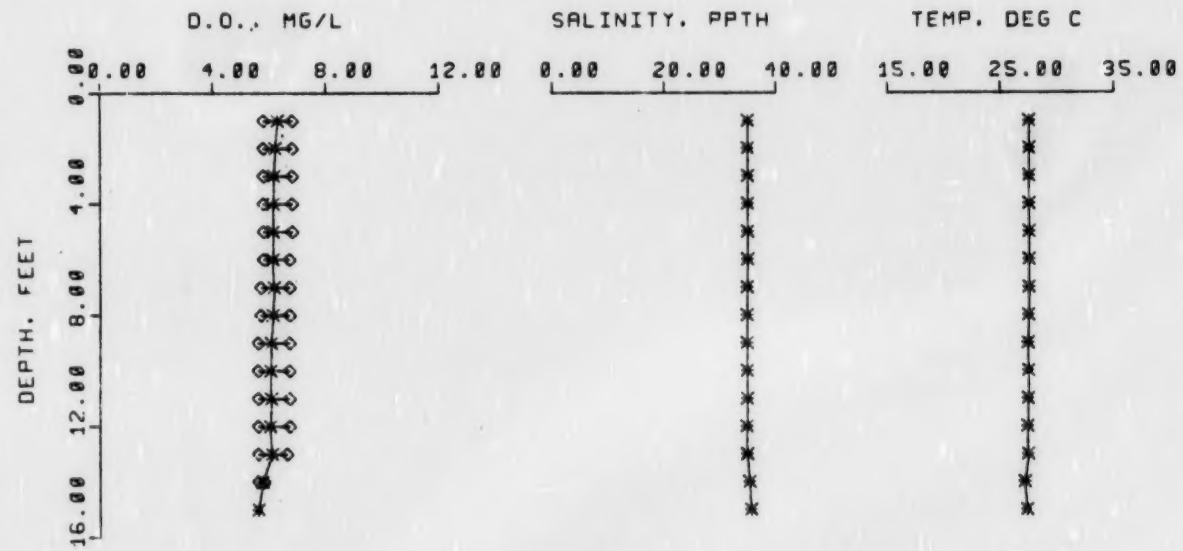
Poor circulation characteristics and reduced assimilative capacities are typified by low dissolved oxygen concentrations and vertical oxygen stratification. These conditions prevailed at some of the stations sampled during February and J ly. A comparison of deep, dead-end canal DST profile data collected in the Old Settlers Beach area (Stations 14-18) with profile data collected in the Intracoastal Waterway (Stations 1, 9, and 13) illustrates the poor circulation characteristics of these dead-end canals.

Although oxygen stratification was evident during both the February and July studies, during February, canal stations 14 through 18 exhibited pronounced DO stratification coupled with salinity stratification, while AIWW stations (Stations 1, 9, and 13) revealed insignificant stratification. During the study period minimum DO concentrations observed at finger canal

FIGURE 2
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

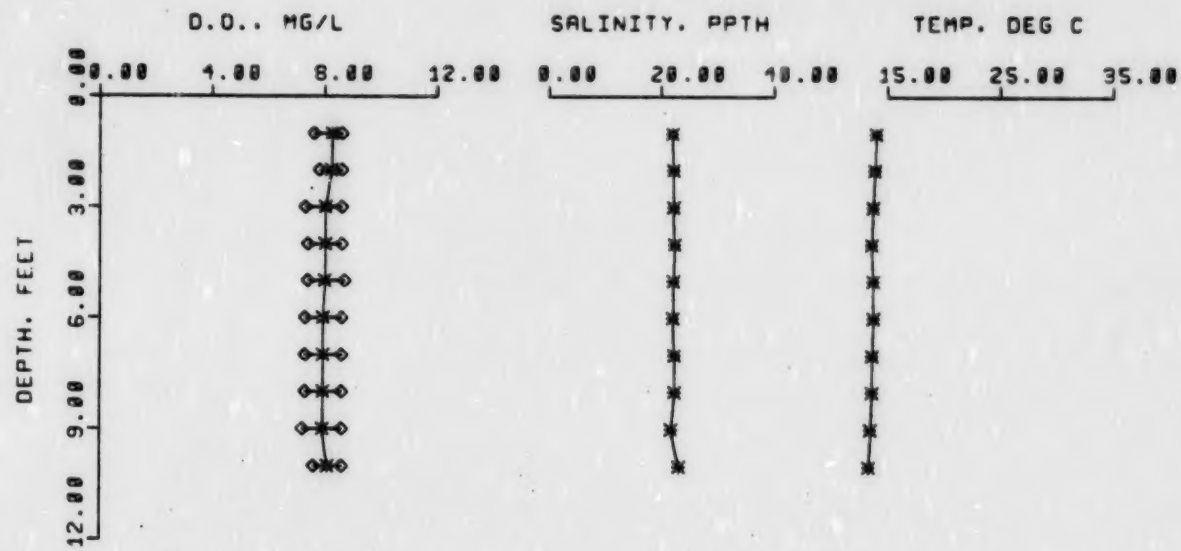


SURF-01 FEB 75

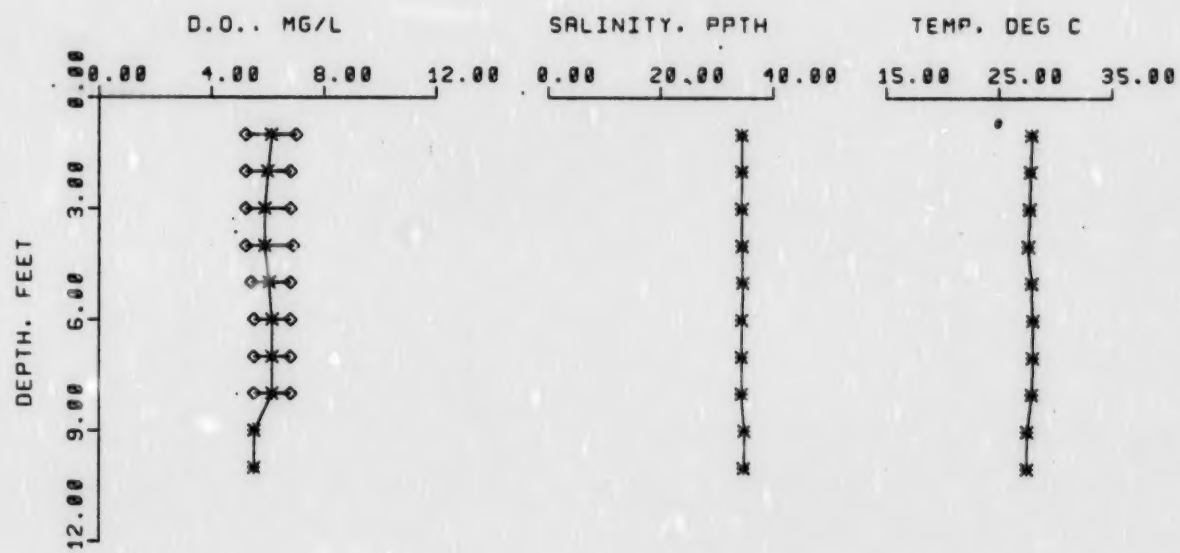


SURF-01 JULY 75

FIGURE 3
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

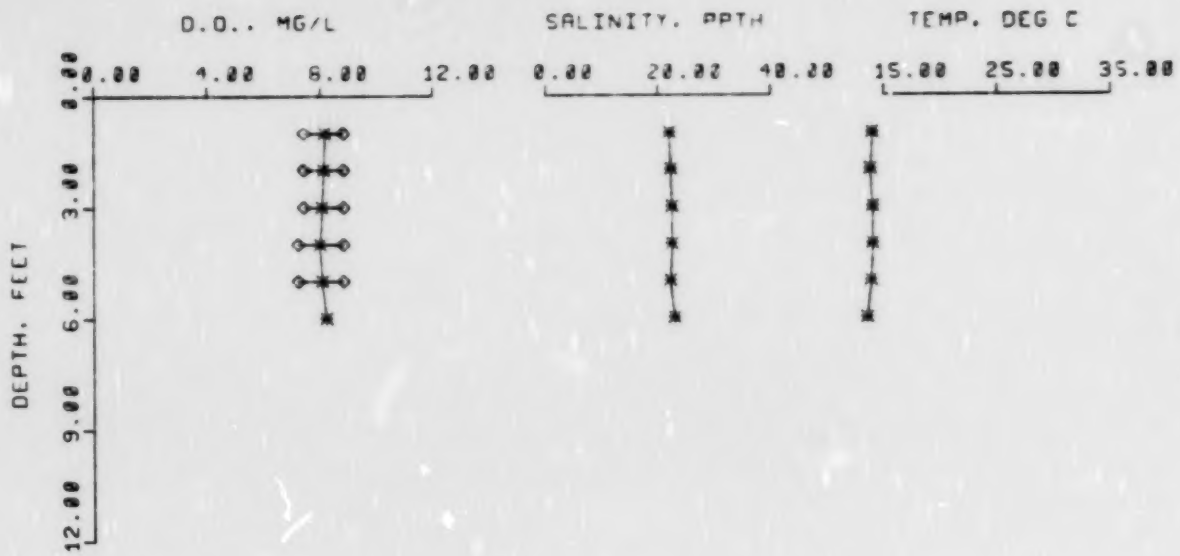


SURF-02 FEB 75

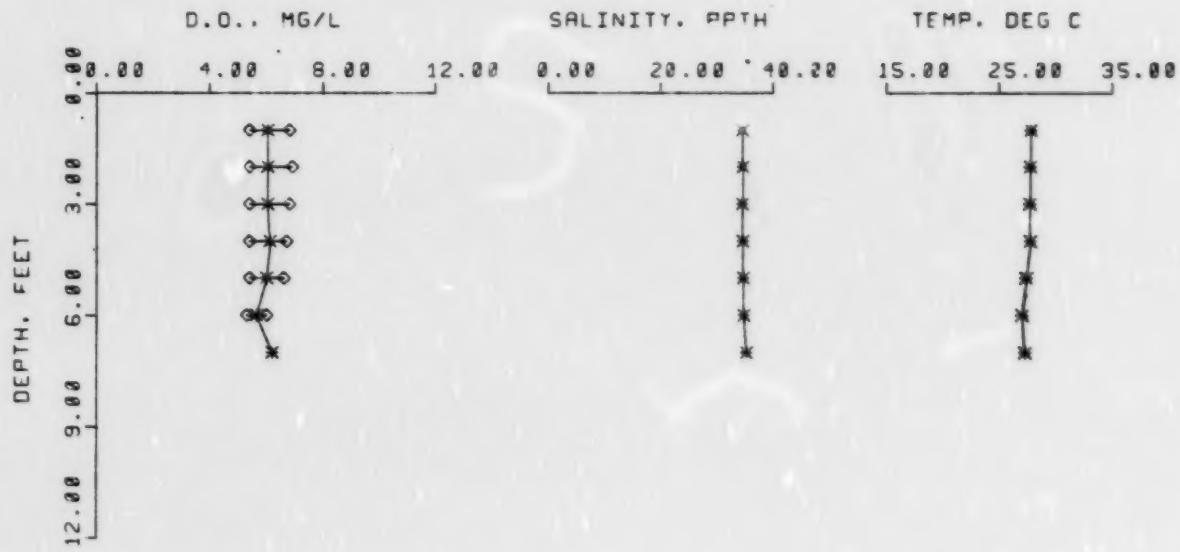


SURF-02 JULY 75

FIGURE 4
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

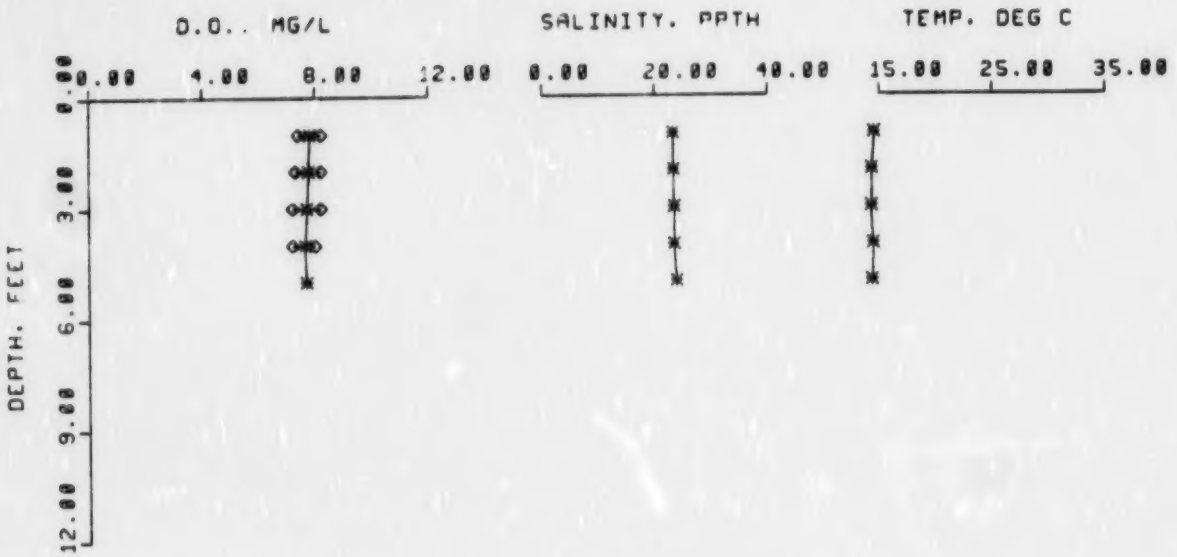


SURF-03 FEB 75

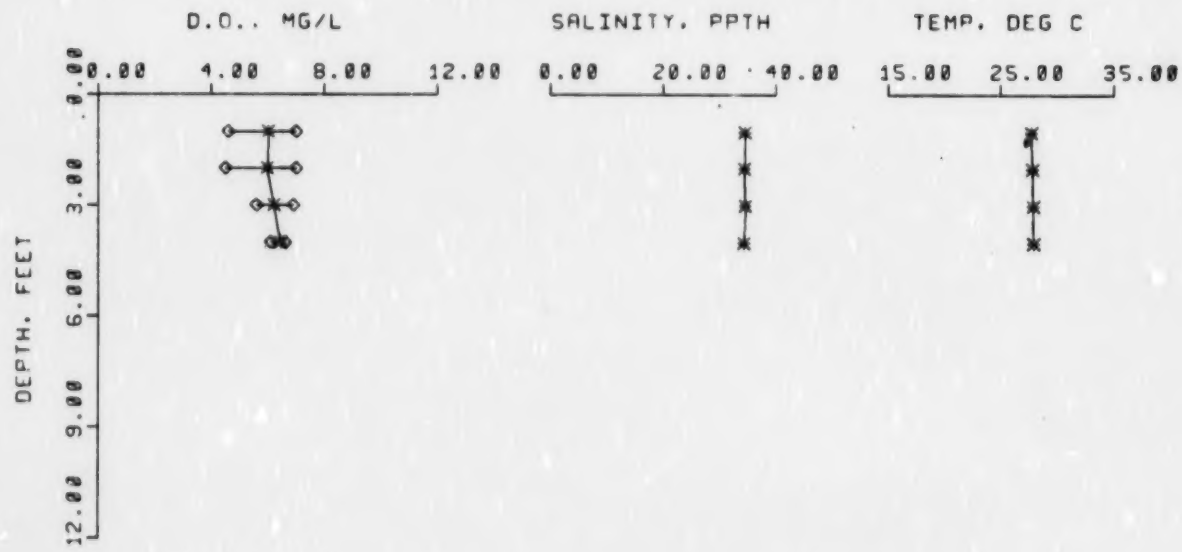


SURF-03 JULY 75

FIGURE 5
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

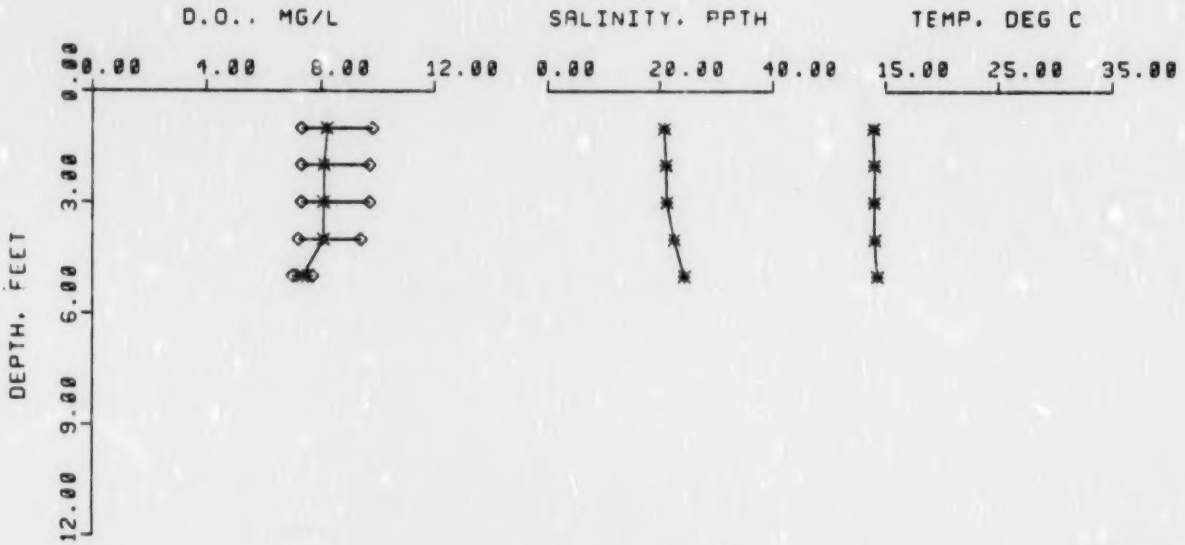


SURF-04 FEB 75

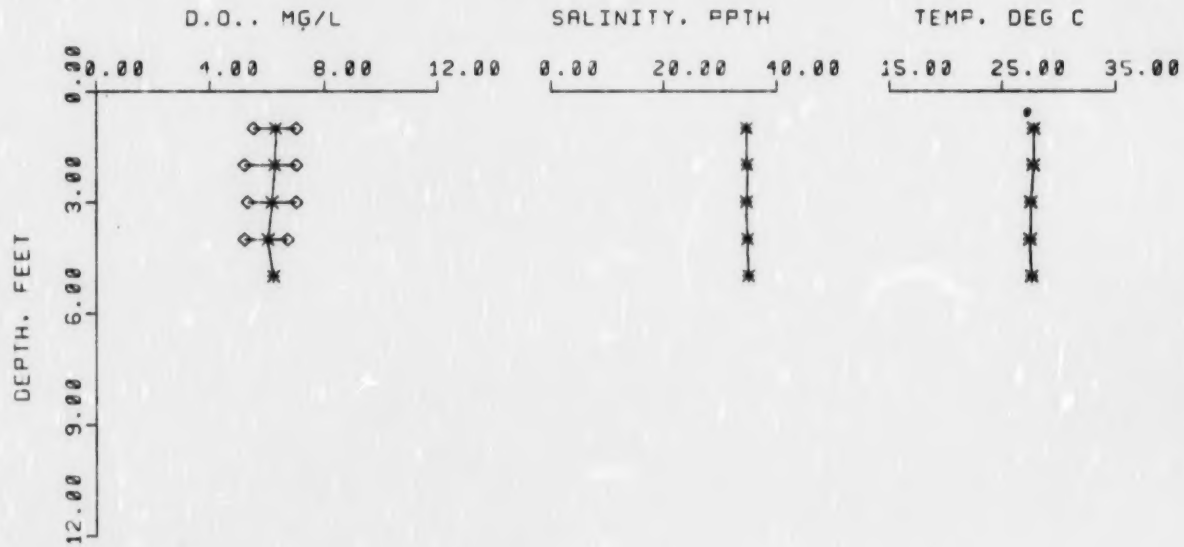


SURF-04 JULY 75

FIGURE 6
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

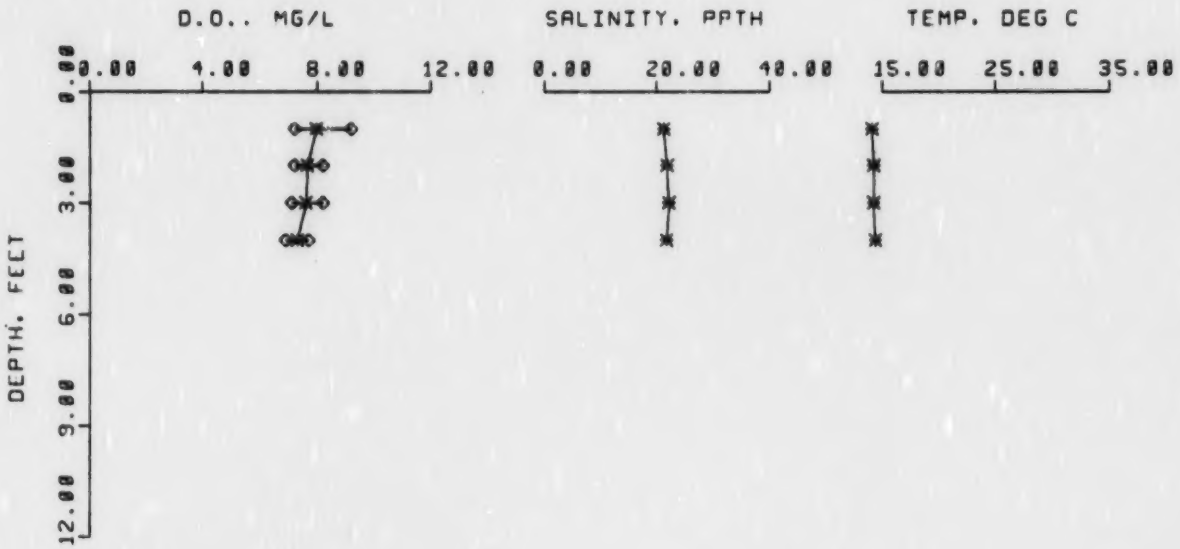


SURF-05 FEB 75

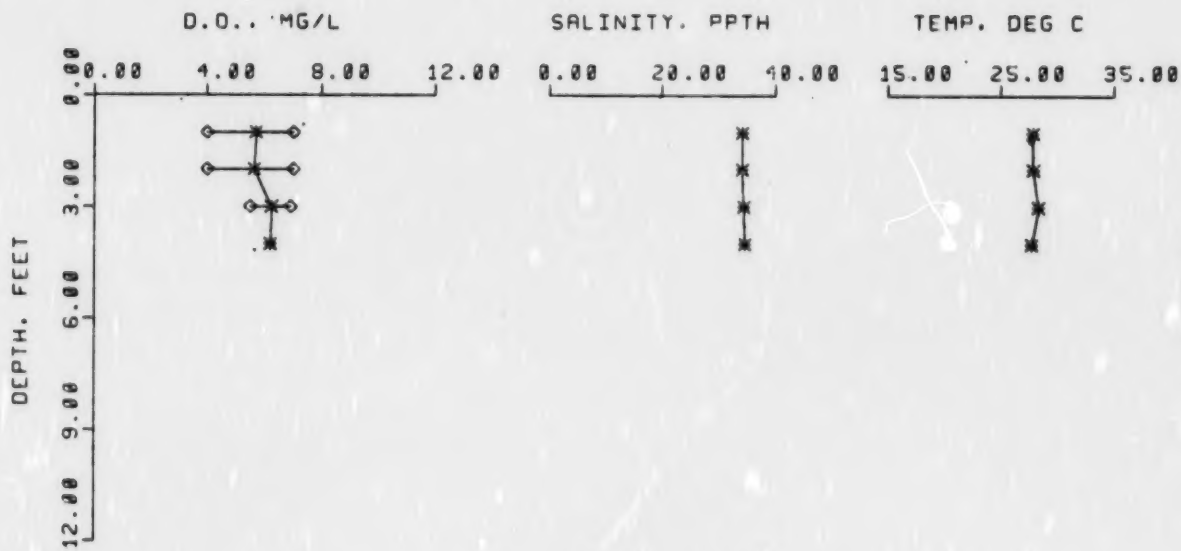


SURF-05 JULY 75

FIGURE 7
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

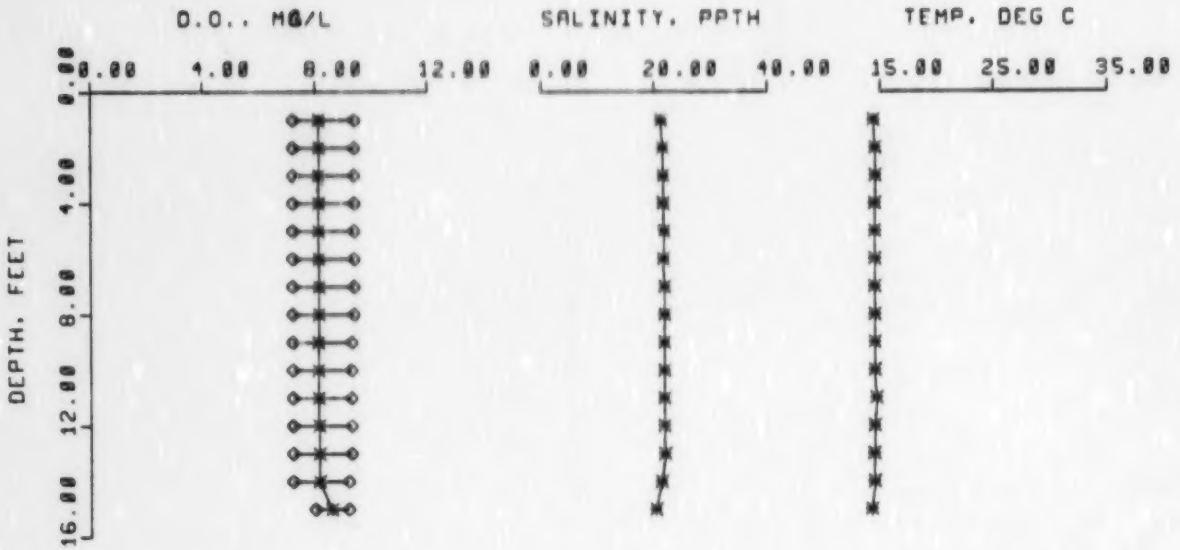


SURF-06 FEB 75

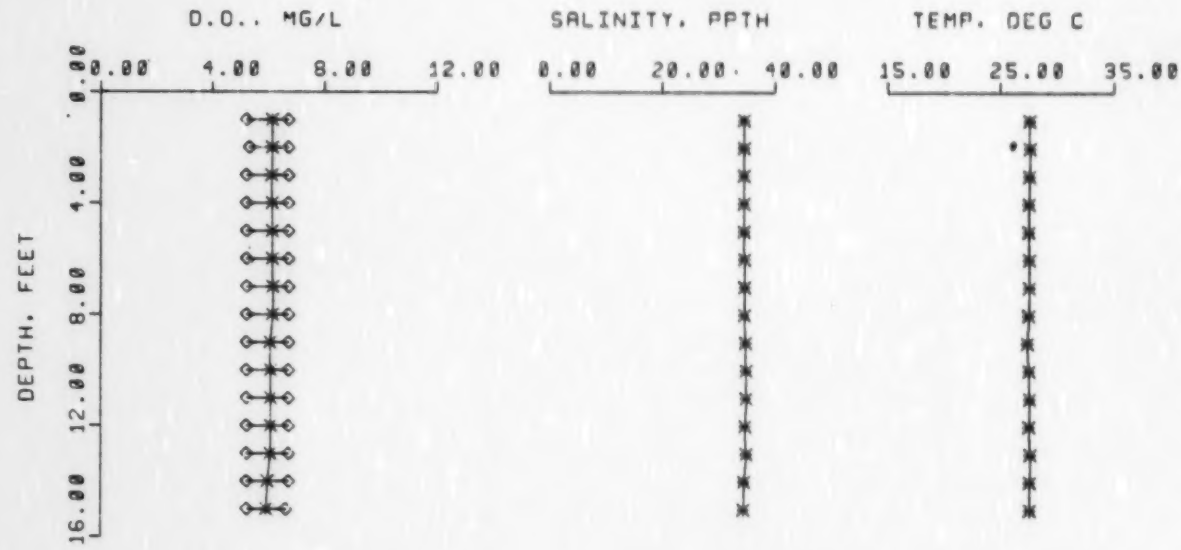


SURF-06 JULY 75

FIGURE 8
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

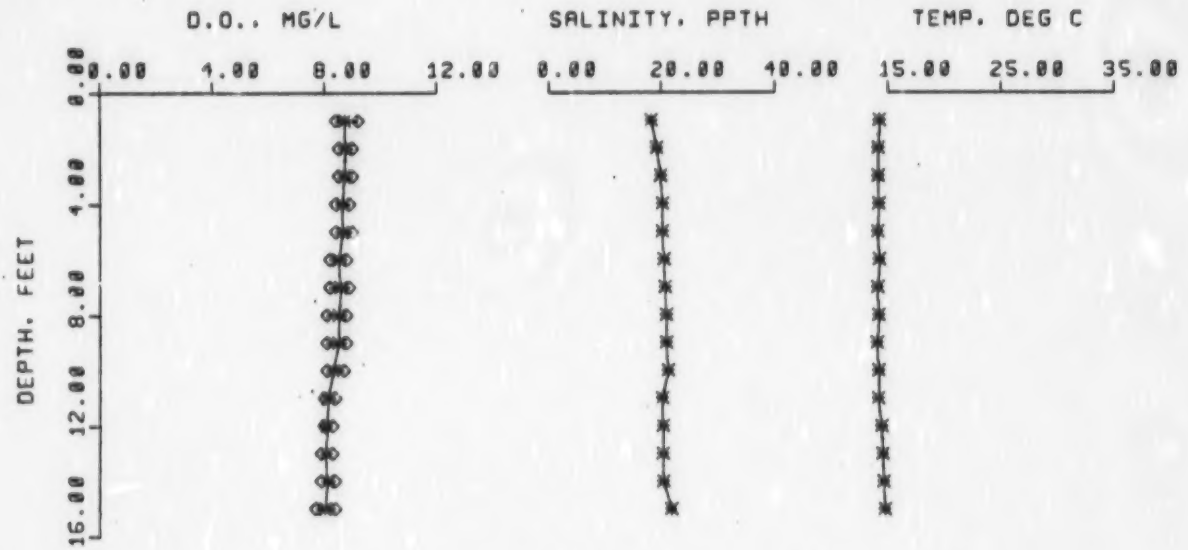


SURF-09 FEB 75

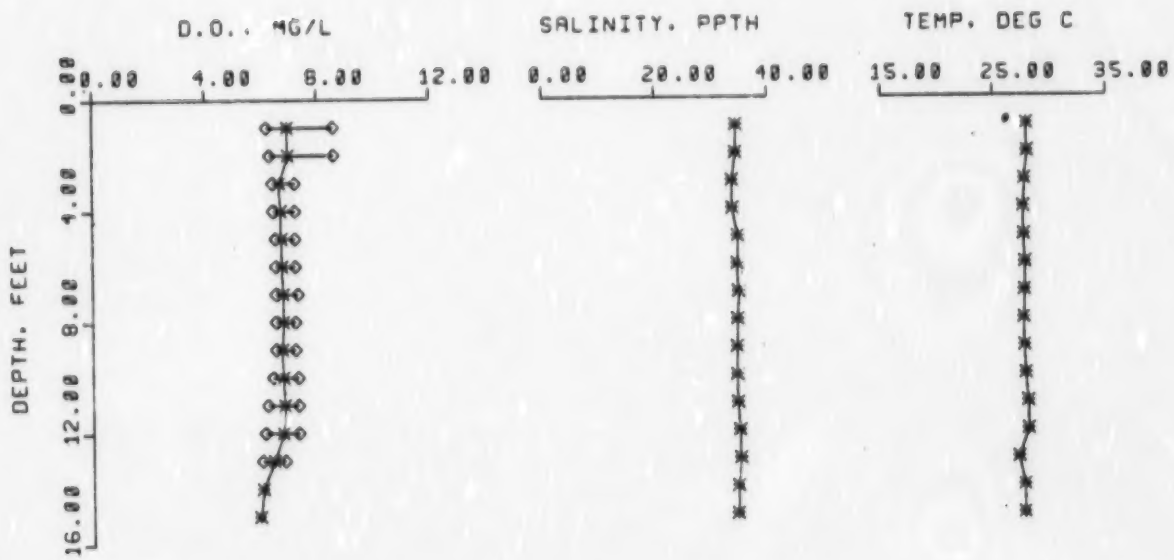


SURF-09 JULY 75

FIGURE 9
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

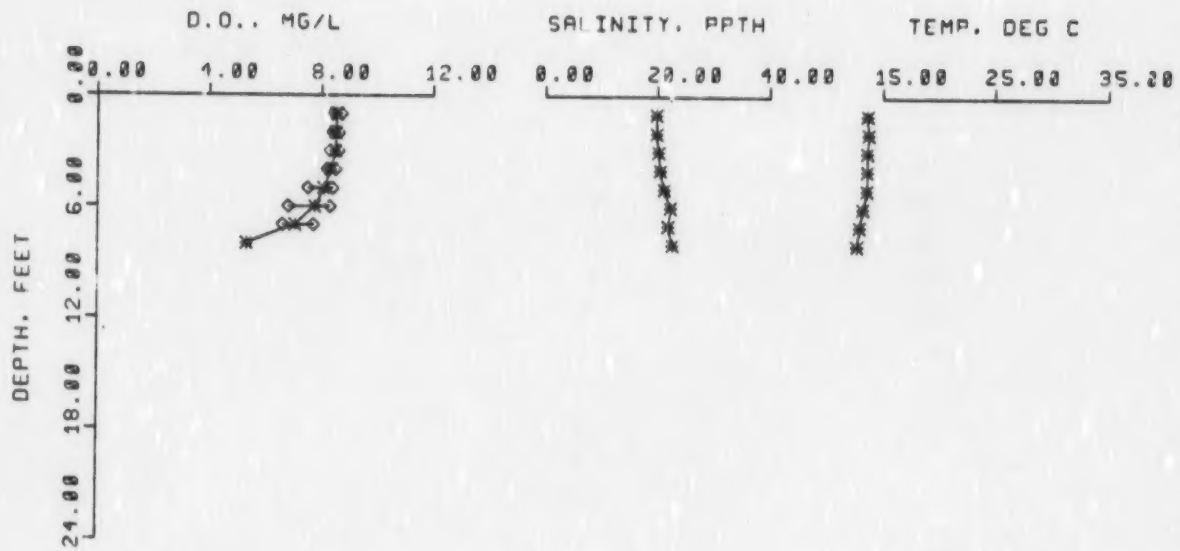


SURF-13 FEB 75

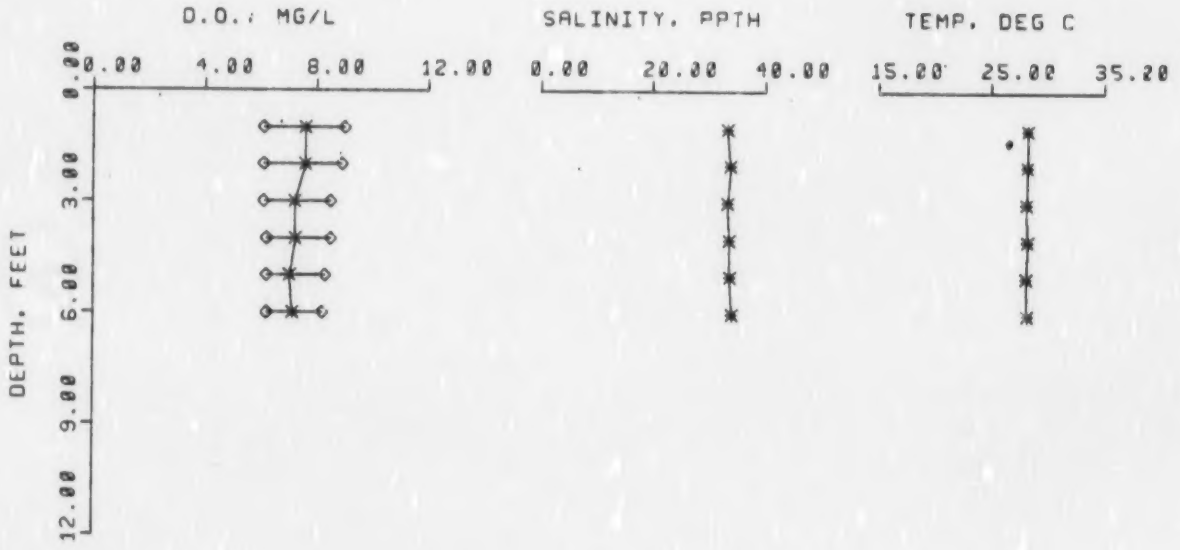


SURF-13 JULY 75

FIGURE 10
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

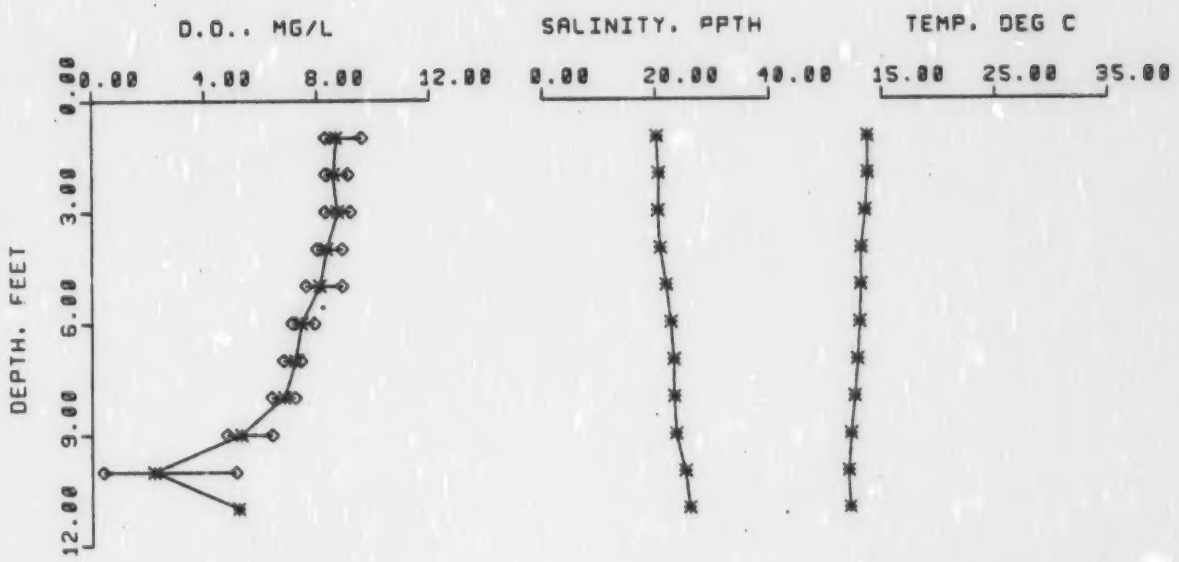


SURF-14 FEB 75

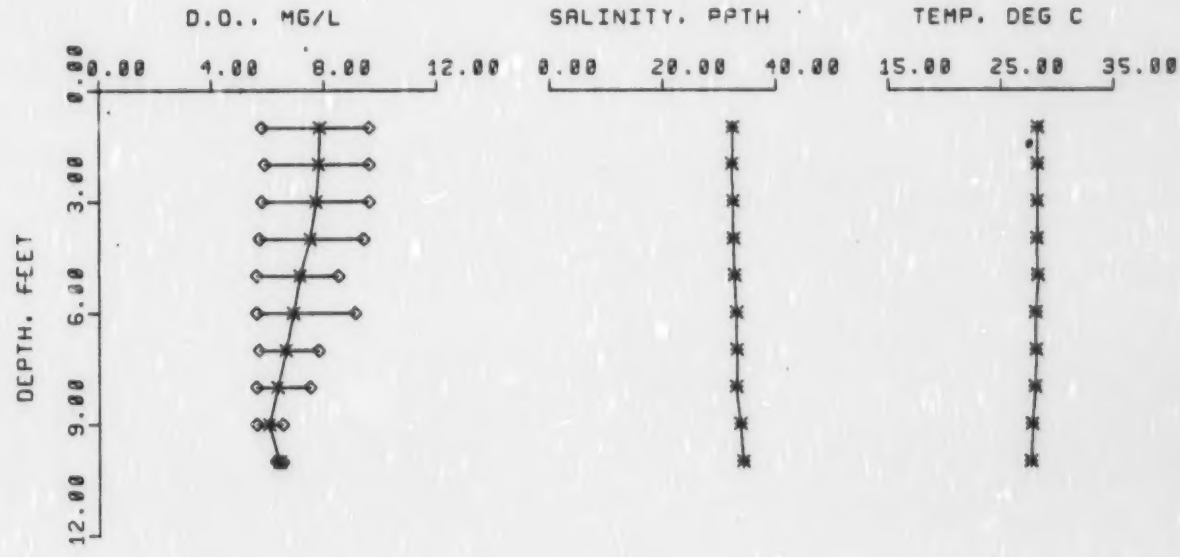


SURF-14 JULY 75

FIGURE 11
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

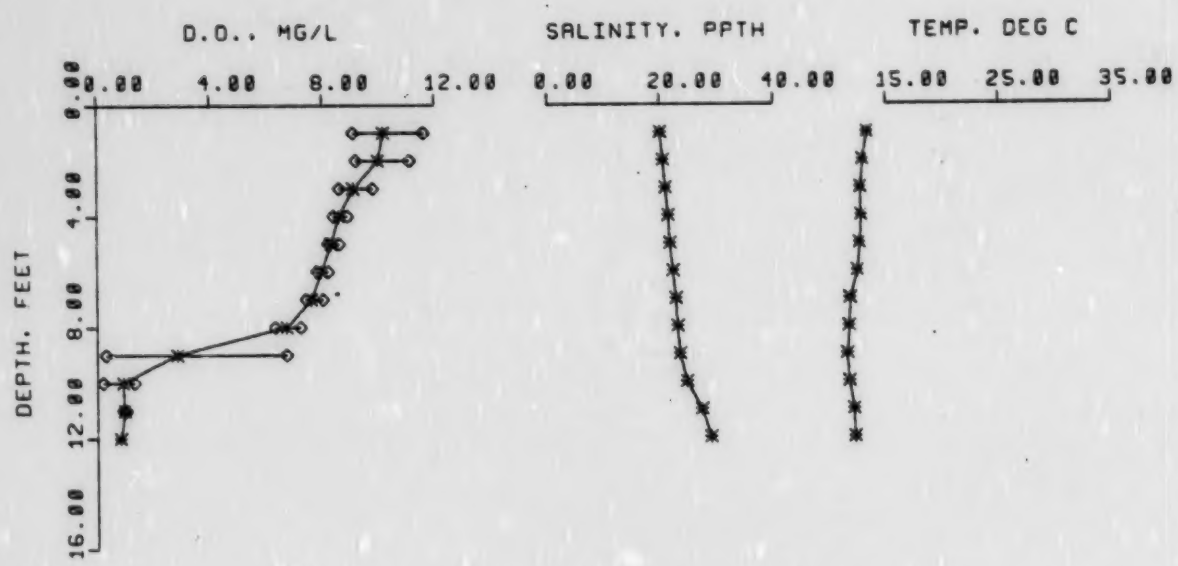


SURF-1S FEB 7S

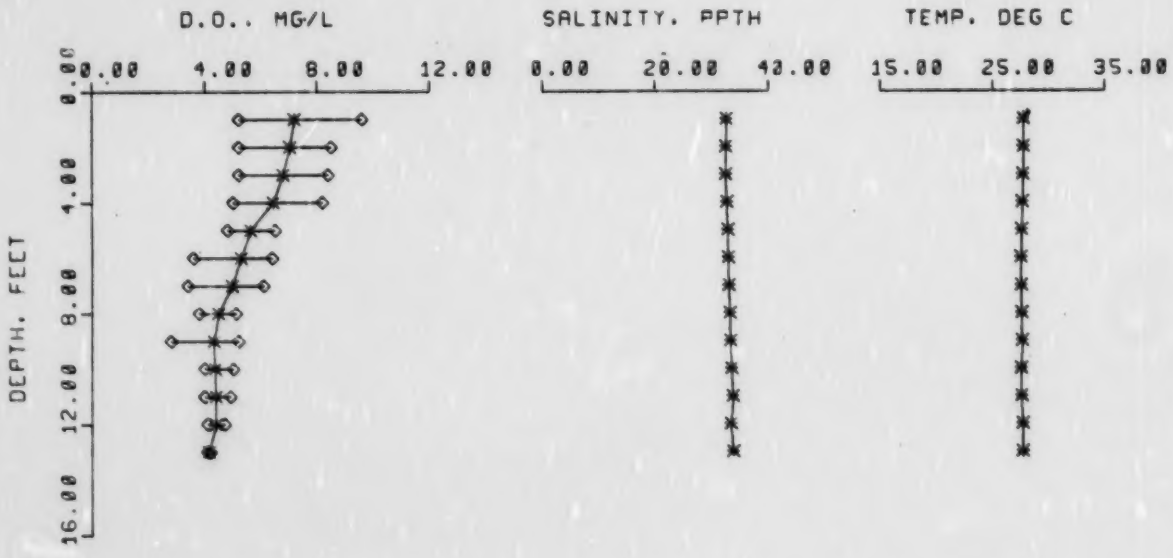


SURF-1S JULY 7S

FIGURE 12
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

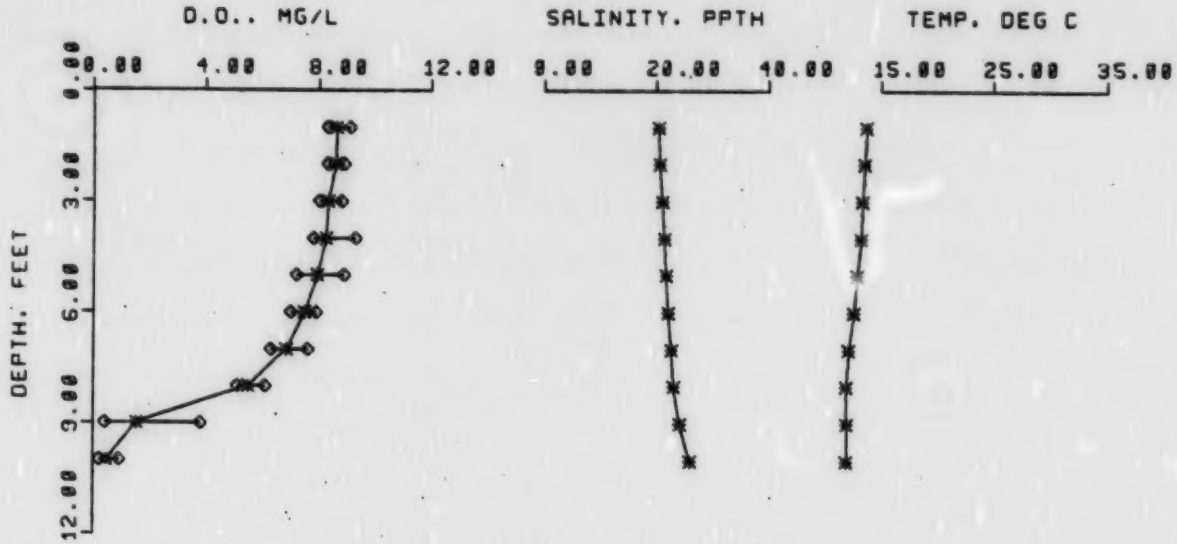


SURF-16 FEB 75

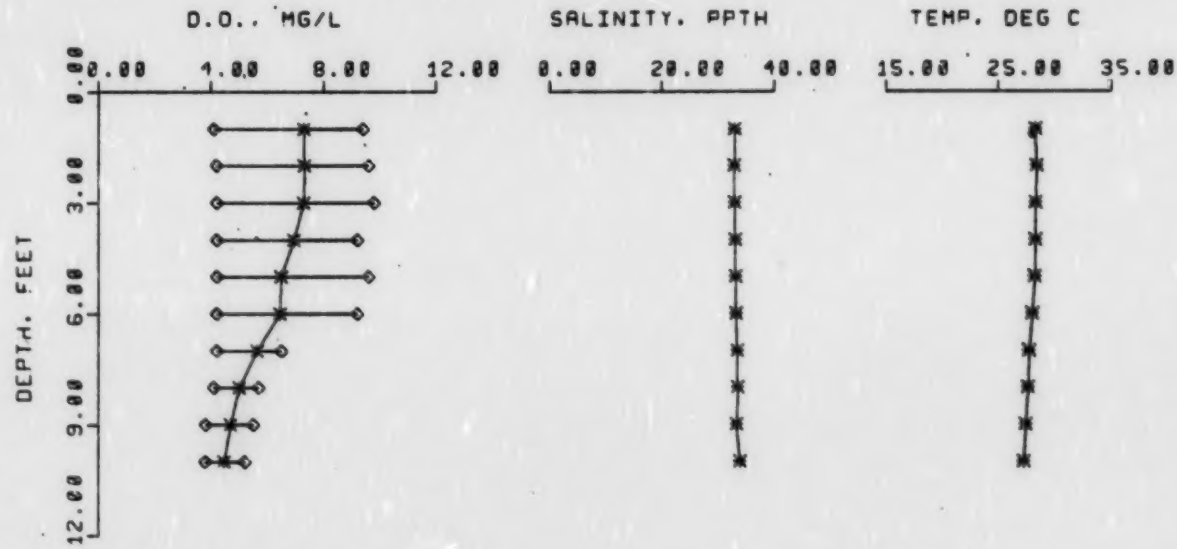


SURF-16 JULY 75

FIGURE 13
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES

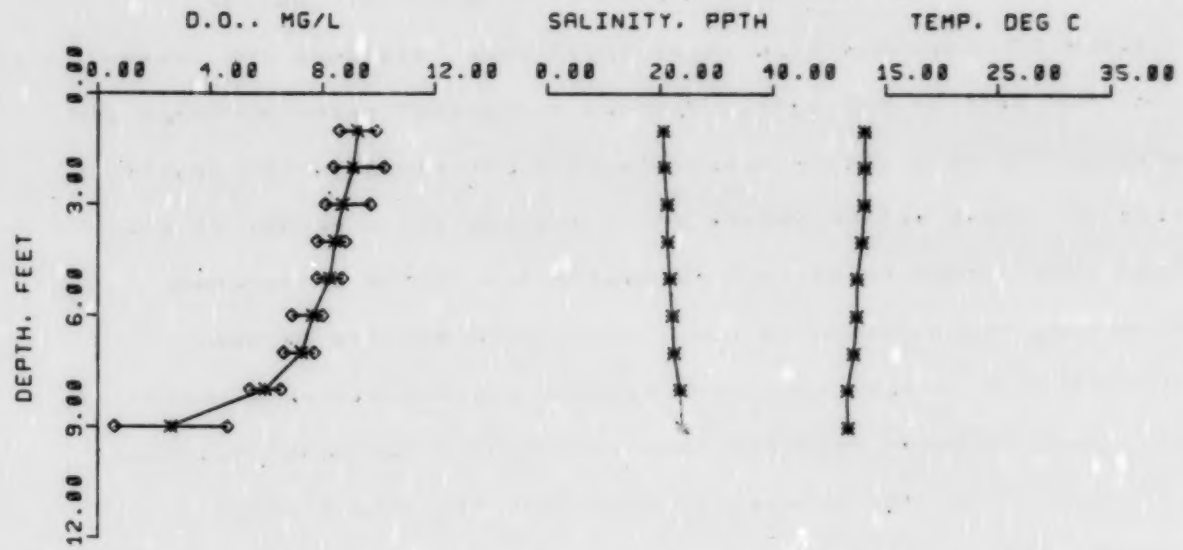


SURF-17 FEB 75

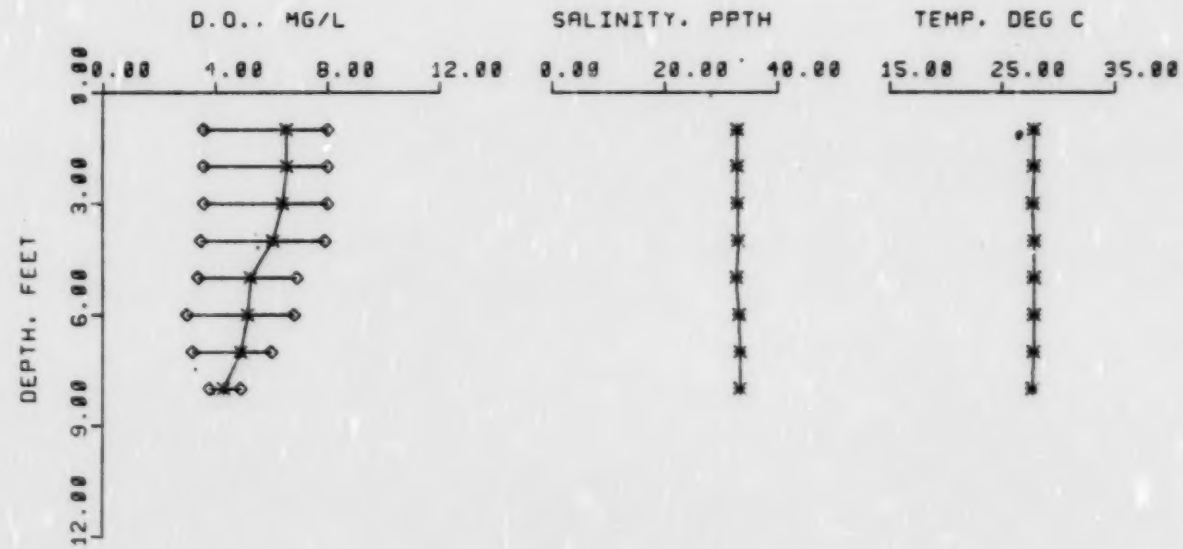


SURF-17 JULY 75

FIGURE 14
DISSOLVED OXYGEN, SALINITY
AND TEMPERATURE PROFILES



SURF-18 FEB 75



SURF-18 JULY 75

stations 15-18 (range of minimums 0.2 mg/l - 0.4 mg/l) were significantly lower than minimum DO concentrations observed at the AIWW stations (range of minimum 4.6 mg/l - 5.9 mg/l). Minimum DO concentrations observed at canal stations 2-6 ranged from 4.0 mg/l to 4.5 mg/l. Without sufficient water movement and mixing, the deep finger canal stations (Stations 14-18) provide a sink for dense saline waters and nutrients which result in low dissolved oxygen conditions as contrasted to the Intracoastal Waterway, where mixing is good. Greater dissolved oxygen concentration ranges and lower minimum concentrations occurred at the canal dead-end stations than occurred at the canal entrance (station 14) or the nearest Intracoastal Waterway station (station 13), (Table II).

DISSOLVED OXYGEN CONCENTRATION
WITH RESPECT TO STATION LOCATION
TABLE II
Dissolved Oxygen
July, 1975

STATION	LOCATION	Depth[1] feet	DO RANGE Maximum mg/l	DO RANGE Minimum mg/l
13	Intracoastal Waterway	8	7.2	6.5
14	Entrance to Canal System	3	8.5	6.1
15	1/3 from canal mouth	5	8.5	5.6
16	1/3 from canal end	6	6.4	3.6
17	1/3 from canal mouth	5	9.6	4.2
18	1/3 from canal end	4	7.9	3.5

1. Mid-depth

SEDIMENTS

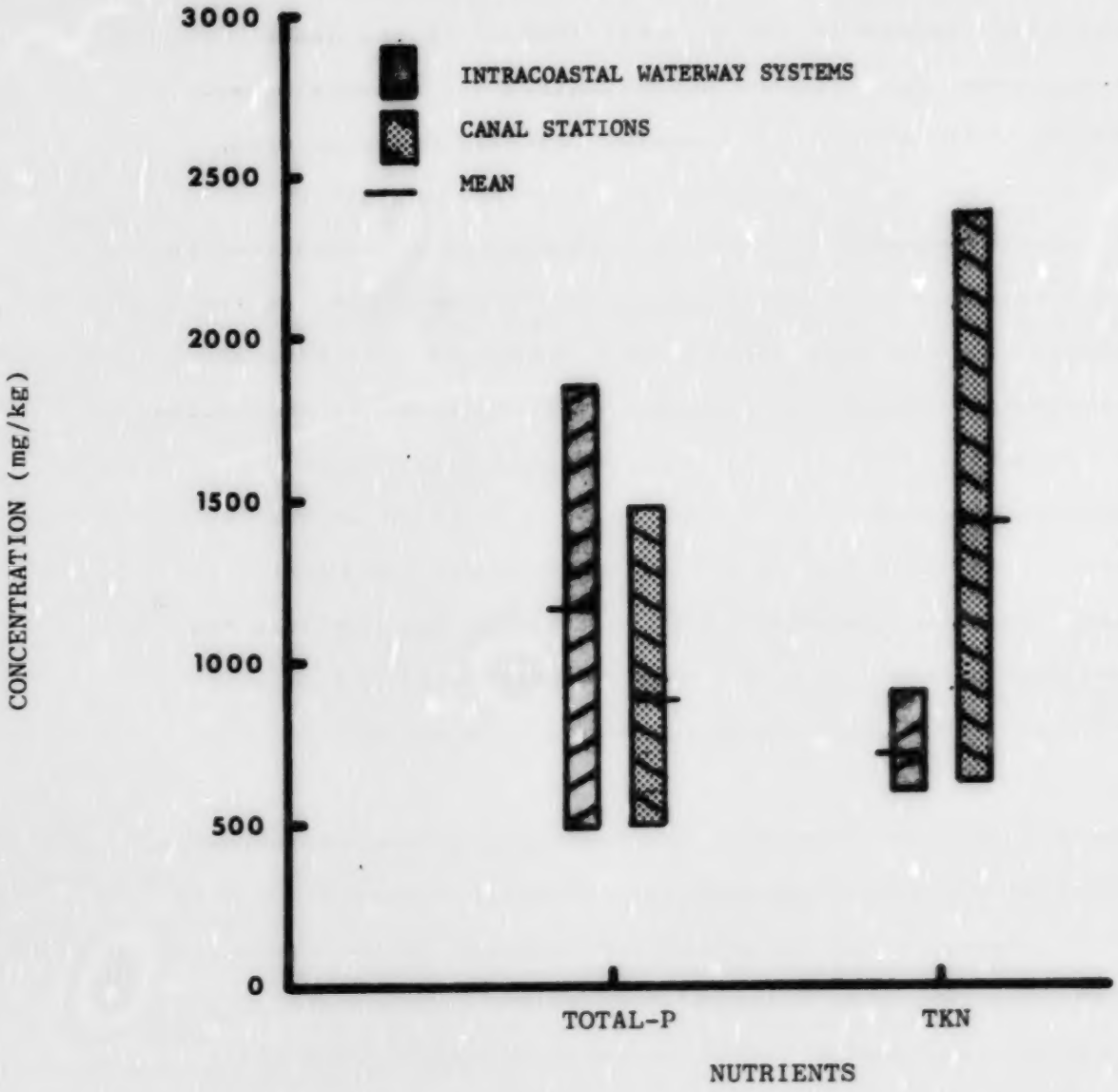
Sediment samples were collected once in July at all surface water quality stations (Figure 1). Samples were collected with a Petersen dredge. Sediment chemical data are contained in Appendix A.

Nitrogen and Phosphorus

Nutrient concentrations in the sediments followed the same general trend as those in the water samples. Averaging the sediment organic nitrogen and total phosphorus concentrations measured at the AIWW Stations (1, 9 and 13) and canal stations (2, 3, 4, 5, 6, 14, 15, 16, 17, and 18) showed the following relationships. Average total phosphorus concentrations at the AIWW stations slightly exceeded the concentrations at the canal stations. However, average total Kjeldahl nitrogen (TKN) concentrations at the canal stations greatly exceeded those at the waterway stations. Average total phosphorus and TKN concentrations at the AIWW stations were 1160 and 717 mg/kg, respectively (Figure 15).

The higher total phosphorus concentration in the water and sediment from the AIWW stations probably result from the industrial and municipal waste discharged from Holly Ridge. These wastes enter the waterway via Cypress and Kings Creeks.

FIGURE 15
NUTRIENT CONCENTRATION
SEDIMENTS
SURF CITY, NC
JULY 1975



Chemical Oxygen Demand and Total Volatile Solids

Generally, sediment chemical oxygen demand (COD) and total volatile solids concentrations (TVS) at the canal stations greatly exceeded those of the Intracoastal Waterway stations (Appendix A, Figure 16). These differences are influenced by urban inputs and the velocity regimes of the waterway types. At the canal stations, urban waste inputs are maximized and velocities are minimized; while at the Intracoastal Waterway stations urban waste inputs are minimized and velocities are maximized.

A relative measure of the state or organic decomposition in the sediments is the ratio of carbon to nitrogen (C:N) in the substrate. A lower ratio indicates a more advanced state of decomposition. Ratios of the canal stations averaged 25.6 while the Intracoastal Waterway stations averaged 12.7. This significant difference in C:N ratios is indicative of the different conditions that exist in the waterway and canal systems. These ratios would suggest that sediments within the Intracoastal Waterway are in a more advanced state of decomposition than those found in the canal stations.

METALS

Sediment samples were analyzed for copper, cadmium, chromium, nickel, lead and zinc (Appendix A). Metals concentrations were generally higher at the canal stations located in the Surf City area (stations 2, 3, 4, 5 and 6) than at the Intracoastal Waterway stations and Old Settlers Beach canals (Figure 17). Station 14, located at the mouth of the Old Settlers Beach canal

FIGURE 16
TVS AND COD CONCENTRATION
SEDIMENTS
SURF CITY, NC
JULY 1975

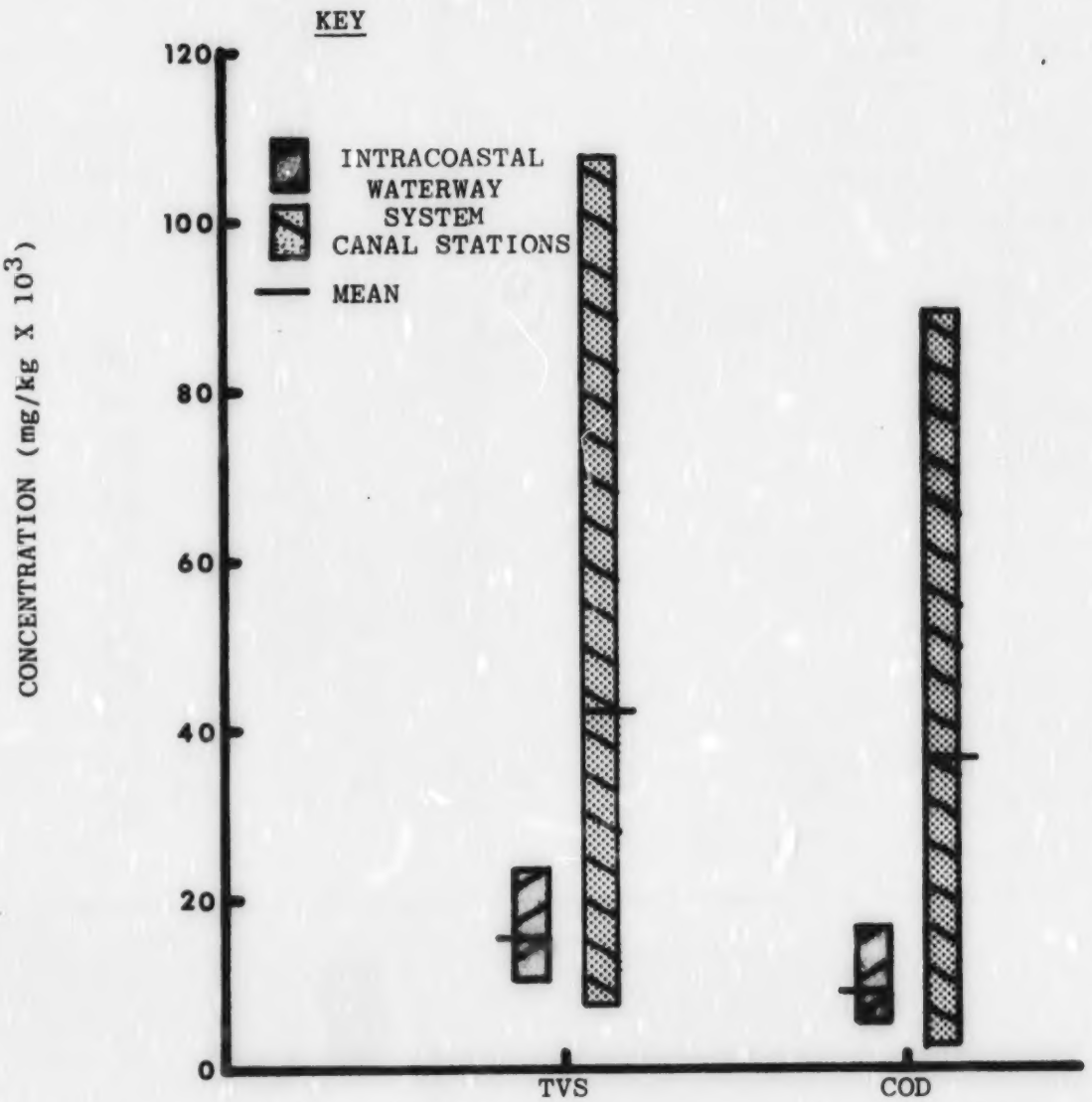
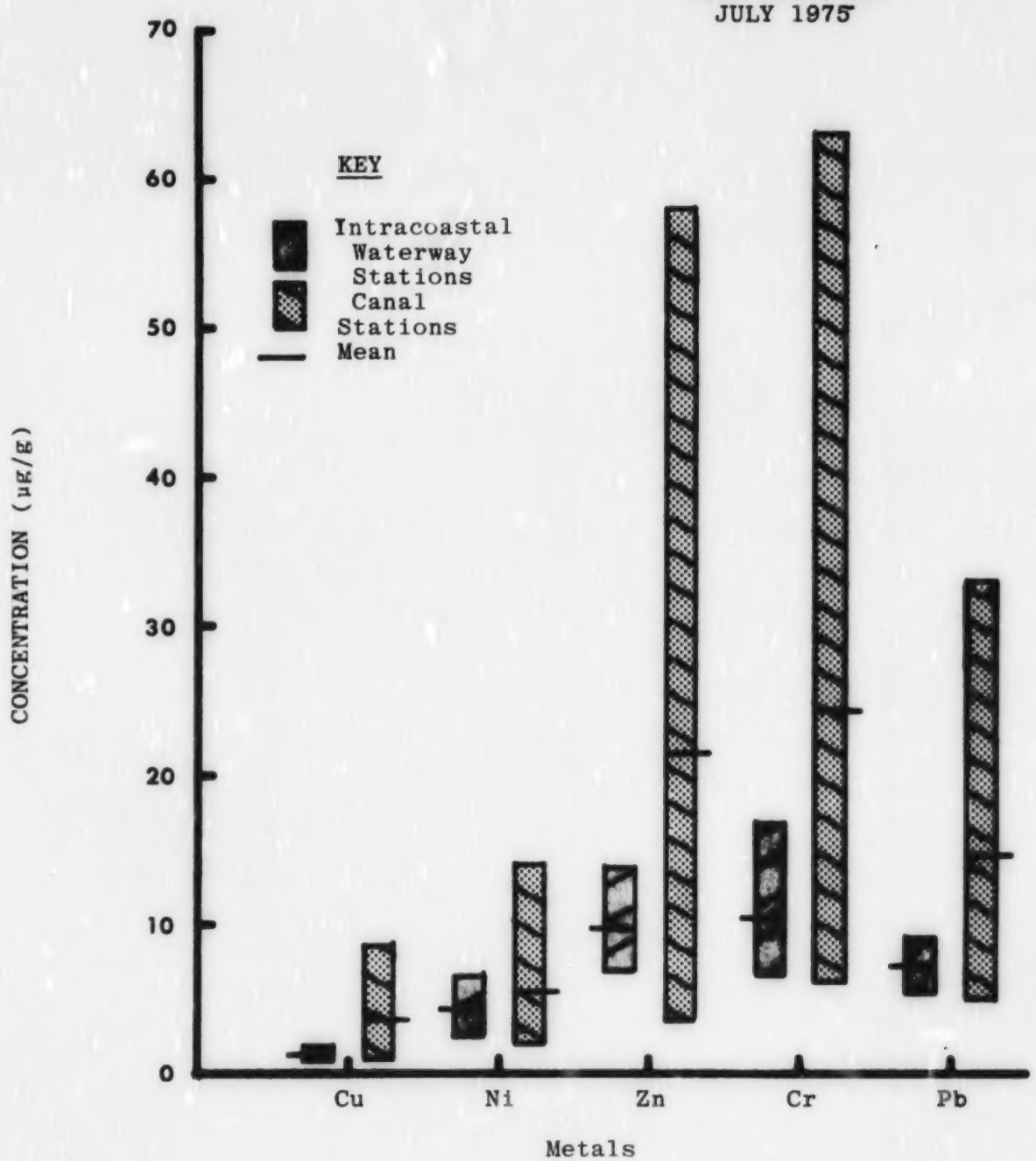


FIGURE 17
METAL CONCENTRATIONS
SEDIMENTS
SURF CITY, NC
JULY 1975



network exhibited the highest metals concentrations of any of the stations in the study area.

Poor flushing characteristics, surface runoff and groundwater infiltration could account for the higher metals concentrations of the canal systems adjacent to Surf City.

GROUND WATER QUALITY

Twelve groundwater (water-table aquifer) stations were established to measure groundwater contamination from septic tank leachates. The wells were 1 1/4 inches in diameter and ranged in total depth from 5.00 to 9.00 feet below land surface. Screened intervals in the upper portion of the water-table aquifer varied from 2.60 to 8.60 feet below land surface. These stations were located upgradient and downgradient from septic tanks (Figure 18). Surface water stations were also established in waterways adjacent to the groundwater stations. Groundwater chemical data are summarized in Tables III and IV and contained in Appendix A.

Nitrogen and Phosphorus

Nutrient (nitrogen and phosphorus compounds) concentrations in the groundwater correlated positively with proximity to septic tank systems. The lowest concentrations of Total Kjeldahl Nitrogen (TKN) and total phosphorus were detected at well station 6 located several hundred feet from a canal and up gradient from most of the septic tanks. At this station, the TKN and total phosphorus concentrations averaged 3.17 and 0.17 mg/l, respectively in February and 3.83 and 0.05 mg/l, respectively in July. Well station 8, downgradient from station 6 and downgradient from septic tanks, had TKN and total phosphorus concentrations of 11.8 and 2.00 mg/l respectively in February and in July the respective TKN and total phosphorus concentrations were 7.6 and 1.58 mg/l (Tables III and IV). This represents a 2 to 3 fold difference in TKN concentration and a 10 to 30 fold difference in total phosphorus concentration between the

FIGURE 18

GROUNDWATER SAMPLING STATIONS

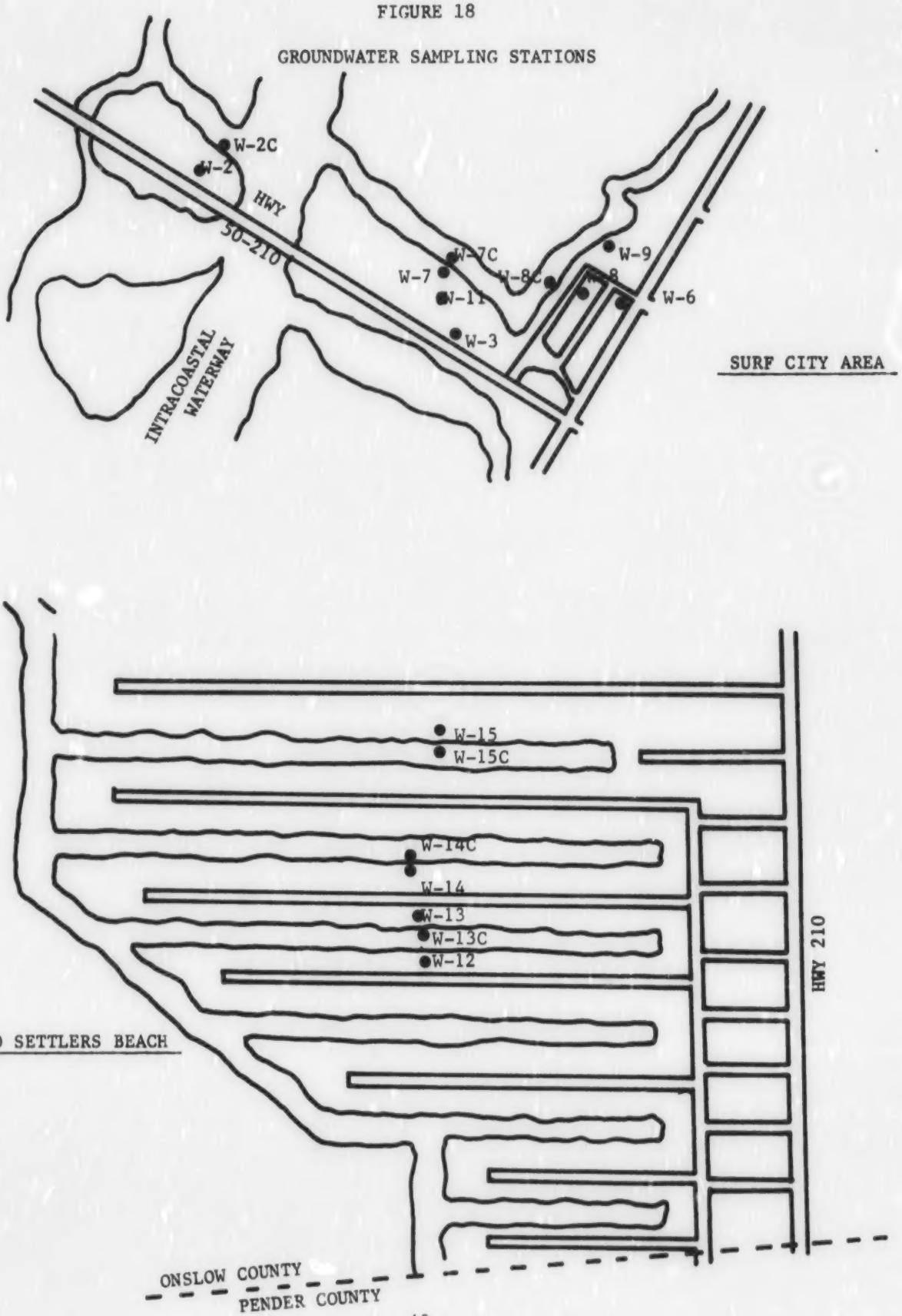


TABLE III
SUMMARY OF PHYSICAL AND CHEMICAL
GROUNDWATER DATA - FEBRUARY 1975

Station Number		pH SU	Chloride mg/1	Total Kjeldahl-N mg/1	NH_3-N mg/1	Total Phosphorus mg/1	TOC mg/1	MBAS mg/1
W-02	Maximum	8.3	455	7.00	6.60	0.19	6.7	--
	Minimum	8.2	51	5.60	4.50	0.16	4.0	--
	Average	8.2	253	6.30	5.55	0.17	5.3	--
W-03	Maximum	8.1	180	6.10	5.50	5.10	85.0	
	Minimum	8.1	150	5.50	3.90	4.20	52.0	
	Average	8.1	165	5.80	4.70	4.65	68.5	
W-06	Maximum	8.1	88	3.35	2.90	0.18	21.0	
	Minimum	8.0	83	3.00	2.70	0.17	20.0	
	Average	8.0	85.5	3.17	2.80	0.17	20.5	
W-07	Maximum	7.8	1500	11.20	11.00	4.10	30.0	
	Minimum	7.4	1300	11.00	10.00	0.96	24.0	
	Average	7.6	1400	11.10	10.50	2.53	27.0	
W-08	Maximum	7.9	47	13.00	13.00	2.00	13.0	
	Minimum	7.6	47	10.50	10.40	2.00	11.7	
	Average	7.7	47	11.75	11.70	2.00	12.3	
W-09	Maximum	7.9	190	19.00	19.00	1.10	17.0	
	Minimum	7.3	170	18.10	17.70	0.96	14.1	
	Average	7.6	180	18.55	18.35	1.03	15.5	
W-10	Maximum	8.0	54	14.00	14.00	3.60	18.0	
	Minimum	7.7	54	12.65	11.70	3.40	14.8	
	Average	7.8	54	13.32	12.85	3.50	16.4	

SUMMARY OF PHYSICAL AND CHEMICAL
GROUNDWATER DATA - FEBRUARY 1975 (continued)

Station Number		pH SU	Chloride mg/l	Total Kjeldahl-N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l	MBAS mg/l
	Maximum	7.4	2300	13.00	12.00	5.10	72.0	
W-11	Minimum	7.2	2300	12.52	11.10	2.20	47.0	
	Average	7.3	2300	12.76	11.55	3.65	59.5	
	Maximum	7.5	5200	58.00	57.00	12.00	210.0	
W-12	Minimum	7.3	4900	57.40	57.00	10.90	160.0	
	Average	7.4	5050	57.70	57.00	11.45	185.0	
	Maximum	7.2	6900	26.00	23.00	6.80	65.0	
W-13	Minimum	7.0	6500	25.00	23.00	5.00	54.0	
	Average	7.1	6700	25.50	23.00	5.90	59.5	
	Maximum	7.5	1700	9.42	8.60	0.38	23.0	
W-14	Minimum	7.1	1600	8.60	7.20	0.35	18.0	
	Average	7.3	1650	9.01	7.90	0.36	20.5	
	Maximum	7.0	7700	9.30	8.40	0.59	17.2	
W-15	Minimum	6.7	7700	9.22	8.10	0.51	14.0	
	Average	6.8	7700	9.26	8.25	0.55	15.6	

TABLE IV
SUMMARY OF PHYSICAL AND CHEMICAL
GROUNDWATER DATA - JULY, 1975

Station Number		Chloride mg/l	Total Kjeldahl-N mg/l	NO_2-NO_3 N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l
W-02	Maximum	17.0	2.32	0.02	1.68	0.10	6.0
	Minimum	15.0	2.15	<0.01	1.34	0.05	5.1
	Average	16.0	2.23	0.01	1.51	0.07	5.5
W-03	Maximum	6300	--	0.07	18.0	4.50	--
	Minimum	6300	--	0.07	18.0	4.50	--
	Average	6300	--	0.07	18.0	4.50	--
W-06	Maximum	60	4.56	0.01	3.72	0.06	15.0
	Minimum	50	3.10	<0.01	2.85	0.05	14.0
	Average	55	3.83	0.01	3.28	0.05	14.5
W-07	Maximum	1800	10.70	0.03	10.10	1.61	52.0
	Minimum	1700	10.00	<0.01	9.40	0.95	34.0
	Average	1750	10.35	0.02	9.75	1.28	43.0
W-08	Maximum	34	10.30	<0.01	9.50	2.00	16.0
	Minimum	32	4.90	<0.01	4.84	1.16	8.5
	Average	33	7.60	<0.01	7.17	1.58	12.3
W-011	Maximum	1460	13.20	<0.01	13.20	4.20	37.0
	Minimum	980	10.00	<0.01	9.50	3.30	27.0
	Average	1220	11.60	<0.01	11.35	3.75	32.0
W-12	Maximum	4400	52.50	0.24	50.00	11.20	510.0
	Minimum	4400	51.50	0.08	48.40	10.90	420.0
	Average	4400	52.00	0.16	49.20	11.05	465.0

SUMMARY OF PHYSICAL AND CHEMICAL
GROUNDWATER DATA - JULY, 1975 (continued)

Station Number		Chloride mg/l	Total Kjeldahl-N mg/l	NO_2-NO_3 N mg/l	NH_3-N mg/l	Total Phosphorus mg/l	TOC mg/l
	Maximum	7800	20.50	0.18	20.00	4.50	192.0
W-13	Minimum	6300	20.50	0.07	18.00	3.80	14.0
	Average	7050	20.50	0.12	19.00	4.15	103.0
	Maximum	2560	20.00	<0.01	20.00	1.66	39.0
W-14	Minimum	1800	12.00	<0.01	11.40	1.51	22.0
	Average	2180	16.00	<0.01	15.70	1.58	30.5
	Maximum	5400	10.50	0.01	8.50	1.07	37.0
W-15	Minimum	5350	9.45	<0.01	8.20	0.68	17.0
	Average	5375	9.97	0.01	8.35	0.87	27.0

upgradient and downgradient stations. The impact on surface water quality of the nutrient loads from septic tanks in the vicinity of well station 8 is seen by comparing the July nutrient concentrations at station 8C (canal station immediately downgradient from well station 8) to those of Intracoastal Waterway station 9. At station 8C TKN and total phosphorus concentrations were 1.27 and 0.15 mg/l respectively while at station 9, the concentrations were 0.17 and 0.08 mg/l respectively (Appendix A).

Groundwater station 12, in the Old Settlers Beach area revealed maximum TKN and total phosphorus concentrations in excess of 58 and 12 mg/l, respectively. Similar to the above example, (canal station 8C and Intracoastal Waterway station 9) canal station 13C (downgradient from septic tank) had TKN concentrations 5 times those of Intracoastal Waterway station 13 in July.

The above examples clearly demonstrate nutrient enrichment of both groundwater and surface water systems by septic tank leachates. The enrichment of downgradient wells demonstrates the subsurface lateral movement of these leachates.

Based on limited data, groundwater station 14, downgradient from septic tanks, appeared to exhibit seasonal changes in TKN and total phosphorus (Appendix A). The average TKN concentration at this station increased from 9.01 in February to 20.0 mg/l in July and the total phosphorus concentration increased from 0.36 to 1.58 mg/l for the same period (Tables III and IV).

Total Organic Carbon (TOC)

The TOC concentrations varied greatly throughout the groundwaters sampled (Tables III and IV). The highest average TOC concentrations were measured at well station 12. These average concentrations ranged from 185 mg/l in February to 465 mg/l in July. Average TOC concentrations at well station 3 were 68.5 mg/l in February and increased to 192 mg/l in July. The cause for the high concentrations is not known precisely; however, the presence of septic tank leachates was suspected (Appendix A).

Discussion

The chemical data indicate that septic tank leachates are contaminating the groundwater (water-table aquifer) system. Dye tracer studies, discussed later, clearly show that the septic tank leachates are reaching surface waters via overland flow during periods of moderate rainfall. The nutrient concentrations in the adjacent waterways reflect these inputs.

WASTE SOURCE CHEMICAL QUALITY

Characteristics of the town of Holly Ridge sewage treatment plant (HRSTP) effluent and those of the Carolina Meat Packers (CMP) plant at Holly Ridge were investigated during July (Figure 1). The HRSTP consists of an inadequate septic tank and inoperative surface sand filters that discharge into Kings Creek which flows into Stump Sound near water quality stations KC and 12. Stations were established at the discharge from the HRSTP, its bypass (station HRSTP-BP) and at a point on Kings Creek (KC) below the STP. The CMP facility discharges to a tributary to Cypress Creek which ultimately flows into Stump Sound near water quality station 10. Two stations established along this stretch were at the intersection of Green Street and the tributary (GS) and at a point on Cypress Creek (CC) approximately mid distance between the packing plant and Stump Sound.

Single samples were taken on July 11 at the HRSTP and HRSTP-BP stations. Mid-morning and mid-afternoon samples were taken on July 11 at stations KC, CC and GS. Chemical data for the stations are given in Table I and in Appendix A.

Nitrogen and Phosphorus

Nitrogen and phosphorus concentrations in the HRSTP and HRSTP-BP discharges are nearly the same. The total phosphorus and total nitrogen concentrations at HRSTP-BP were 3.0 and 6.8 mg/l, respectively. The high nutrient loading to Kings Creek from the HRSTP was reflected at downstream station KC where the average total phosphorus and total nitrogen concentrations were

0.79 and 2.02 mg/l, respectively. The TKN and NO_3-NO_2 concentrations at the HRSTP were 5.65 and 0.05 mg/l, respectively, while at the KC station the TKN and NO_3-NO_2 concentrations were 0.59 and 1.43 mg/l, respectively, in Kings Creek (Station KC).

Nutrient concentrations from the CMP plant were extremely high. At the GS station average TKN, NO_3-NO_2 and total phosphorus concentrations were 28.0, 2.78 and 124.0 mg/l, respectively. At the downstream sampling station CC, the respective average concentrations were 12.87, 0.49 and 25.3 mg/l, respectively.

Total Organic Carbon

The TOC concentrations followed similar trends to those observed for nitrogen and phosphorus. At stations HRSTP, HRSTP-BP and KC the average TOC concentrations were 64.0, 38.0, and 12.9 mg/l, respectively. Stations GS and CC below the CMP Plant had average TOC concentrations of 1080 and 14.0 mg/l, respectively.

Although waste flows were not measured, the strength of these point source discharges indicates that corrective action is required. The increased level of phosphorus measured in the Intracoastal Waterway may be attributed to these discharges.

COLIFORM RESULTS

Total and fecal coliform bacteria densities were measured at groundwater and surface water stations during two intensive studies in February and July, 1975 and were monitored once per month during March, April and June. Bacterial quality of both groundwater and surface water was measured in the study area.

Data collected during these investigations are contained in Appendix A and summarized in Tables V through IX.

Surface Water Quality - February

During February, bacterial quality of surface waters was determined at the stations shown in Figure 1 and summarized in Table V.

Both total and fecal coliform densities during the February study were high at all stations sampled. Mean[1] total coliform densities ranged from >410 to >1100/100 ml (Table V). Mean fecal coliform densities ranged from 220 to >1100/100 ml. The U. S. Public Health Service and State of North Carolina standard (median of 70 total coliform/100 ml and not more than 10% of the samples shall exceed an MPN of 230/100 ml for a 5-tube decimal dilution test [or 330/100 ml where a 3-tube decimal dilution is used]) for shellfish harvesting waters was violated at all stations sampled.

[1]Geometric Mean

TABLE V

SUMMARY OF SURFACE WATER COLIFORM DATA
SURF CITY - OLD SETTLERS BEACH, NC
FEBRUARY, 1975

Station	Total Coliform/100 ml [1/]					Fecal Coliform/100 ml				
	Maximum	Minimum	Average	Log Mean	Median	Maximum	Minimum	Average	Log Mean	Median
1	>1100	1100	>1100	>1100	>1100	460	460	460	460	460
2	>1100	460	> 887	>823	1100	460	240	313	298	240
3	>1100	240	>510	>413	350	460	150	273	251	240
4	>1100	240	>565	>486	460	1100	240	565	486	460
5	>1100	460	>780	>711	780	460	150	273	251	240
6	>1100	460	>780	>711	780	460	93	258	223	240
9	>1100	240	>670	>514	670	1100	93	473	326	350
10	>1100	>1100	>1100	>1100	>1100	>1100	>1100	>1100	>1100	>1100
12	>1100	>1100	>1100	>1100	>1100	>1100	1100	>1100	>1100	>1100
13	>1100	460	>887	>823	1100	460	93	338	270	460
14	>1100	1100	>1100	>1100	1100	>1100	460	>780	>711	>780
15	>1100	>1100	>1100	>1100	>1100	>1100	240	>670	>514	>670
16	>1100	460	>940	>885	>1100	>1100	93	>688	>477	>780
17	>1100	460	>887	>823	1100	1100	460	673	615	460
18	>1100	1100	>1100	>1100	>1100	1100	240	600	495	460

[1/] MPN (3-Tube)

TABLE VI

SUMMARY OF GROUNDWATER COLIFORM DATA
SURF CITY - OLD SETTLERS BEACH, NC
February, 1975

Station	Total Coliform/100 ml 1/					Fecal Coliform/100 ml				
	Maximum	Minimum	Average	Log Mean	Median	Maximum	Minimum	Average	Log Mean	Median
W-2	4	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-3	4	4	4	4	4	<3	<3	<3	<3	<3
W-6	150	4	77	23	77	<3	<3	<3	<3	<3
W-7	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-8	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-9	15	7	11	10	11	15	4	9	7	9
W-10	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-11	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-12	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-13	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-14	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
W-15	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3

1/ MPN (3-Tube)

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TABLE VII
SUMMARY OF SURFACE WATER COLIFORM DATA
SURF CITY - OLD SETTLERS BEACH, NC
July, 1975

Station	Total Coliform/100 ml 1/					Fecal Coliform/100 ml				
	Maximum	Minimum	Average	Log Mean	Median	Maximum	Minimum	Average	Log Mean	Median
1	23	5	12	10	11	8	2	4	4	4
2	260	79	144	129	118	33	7	16	13	11
3	490	31	245	160	230	79	4	41	22	41
4	49	26	38	36	38	13	<2	<8	<5	8
5	490	17	200	107	146	17	<2	<9	<5	8
6	212	23	145	110	172	49	2	15	6	5
9	14	<2	<8	<6	8	2	<2	<2	<2	2
13	33	5	20	16	20	13	<2	<6	<4	4
14	240	49	99	81	63	49	2	18	8	4
15	172	23	92	75	79	4	<2	<3	<3	4
16	146	70	117	113	130	79	8	27	19	17
17	79	7	40	29	46	8	2	4	3	2
18	542	33	198	115	141	33	4	14	11	11
CC	>2,400,000	240,000	>1,320,000	>759,000	1,300,000	542,000	7,900	275,000	65,400	270,000
CS	>2,400,000	>2,400,000	>2,400,000	>2,400,000	>2,400,000	>2,400,000	1,600,000	>2,000,000	>1,960,000	>2,000,000
KC	49,000	49,000	49,000	49,000	49,000	13,000	7,000	10,000	9,500	10,000

1/ MPN (5-Tube)

TABLE VIII
SUMMARY OF GROUNDWATER COLIFORM DATA
SURF CITY - OLD SETTLERS BEACH, NC
July, 1975

Station	Total Coliform/100 ml 1/					Fecal Coliform/100 ml				
	Maximum	Minimum	Average	Log Mean	Median	Maximum	Minimum	Average	Log Mean	Median
W-2	49	<2	<20	<9	15	<2	<2	<2	<2	<2
W-3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
W-6	33	7	16	13	13	5	<2	<3	<3	<2
W-7	23	2	9	5	5	<2	<2	<2	<2	<2
W-8	130	<2	<40	<14	13	<2	<2	<2	<2	<2
W-9	79	<2	<24	<8	8	<2	<2	<2	<2	<2
W-10	5	<2	<3	<3	<2	<2	<2	<2	<2	<2
W-11	172	<2	<52	<12	18	<2	<2	<2	<2	<2
W-12	11	<2	<5	<4	4	<2	<2	<2	<2	<2
W-13	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
W-14	49	<2	<26	<12	27	2	<2	<2	<2	<2
W-15	2	<2	<2	<2	<2	<2	<2	<2	<2	<2

1/ MPN (5-Tube)

TABLE IX
SUMMARY OF SURFACE WATER COLIFORM DATA
SURF CITY - OLD SETTLERS BEACH, NC
FEBRUARY-JULY, 1975

Station	Total Coliform/100 ml[1/]					Fecal Coliform/100 ml				
	Maximum	Minimum	No. Samples	2/	Median	Maximum	Minimum	No. Samples	2/	Median
	3/	4/								
1	1100L	3K	13	3	13	460	2K	13	3	5
2	1100L	3	13	4	79	460	3K	13	1	14
3	1100L	3K	14	4	195	460	3K	14	1	56
4	1100L	3K	14	3	49	1100	2K	14	3	13
5	1100L	3K	14	5	56	460	2K	14	1	10
6	1100L	3K	14	4	172	460	2K	14	1	32
9	1100L	2K	14	2	12	1100	2K	14	2	4
10	1100L	1100K	4	4	1100L	1100L	1100L	4	4	1100L
12	1100L	1100K	2	2	1100L	1100L	1100	2	2	1100L
13	1100L	5	7	3	33	460	2K	7	2	13
14	1100L	3K	15	5	63	1100L	2K	15	4	9
15	1100L	3K	15	4	58	1100L	2K	15	2	4
16	1100L	4	15	4	109	1100L	3K	15	3	10
17	1100L	7	8	3	64	1100	2	8	3	6
18	1100L	33	8	5	391	1100	4	8	2	24

1/ 3-tube MPN
2/ Number of samples exceeding 230/ml (5-tube test) and 330/100 ml (3-tube test)
3/ L - Greater than
4/ K - Less than

The elevated coliform densities measured were reflective of the "wet-weather" conditions that prevailed immediately prior to and during the study period. These excessive coliform densities resulted from a combination of overland runoff, inadequately treated waste discharges from the town of Holly Ridge and malfunctioning septic tank systems.

Groundwater Quality - February

Bacterial quality of groundwater systems was determined at the stations shown in Figure 18. Shallow (less than 10 feet deep) well points were installed and used to sample groundwater quality. Samples for coliform determinations were collected by a pitcher pump which had been thoroughly soaked in a chlorine solution (approximately 30 mg/l). Samples were collected after sufficient well water had been pumped to purge the system to the point that no chlorine residual was detectable.

Generally, both total and fecal coliform densities were low (<3/100 ml) at all test wells (Table VI). Total coliform densities in excess of 3/100 ml were measured at only four of the stations. With the exception of station W-9, the notable absence of fecal coliforms in these well waters suggests that the source of the coliforms enumerated may have been incidental to well installation or sampling techniques rather than groundwater bacterial contamination.

The reason for the disparity in the results of the chemical and bacterial indicators of pollution is not fully known. However, the absence of bacterial contamination, while significant chemical contamination exist, may only reflect the

greater susceptibility of bacteria to removal by physical means and/or dieoff while chemical contaminants can only be removed by physical means.

Surface Water Quality - July

A summary of the July coliform data is contained in Table VII. Coliform densities during July were considerably lower at all stations than the levels measured in February. Stations located in the Intracoastal Waterway (stations 1, 9 and 13) had mean total coliform densities of less than 20/100 ml which indicated little fecal contamination.

With the exception of the freshwater tributary stations (stations GS, CC and KC) the mean total and fecal coliform densities ranged from <6 to 160/100 ml and <2 to 22/100 ml, respectively. The coliform concentrations measured in July were reflective of the dry-weather conditions that prevailed prior to and during the surface water sampling period. Note that the July bacterial samples were collected on July 8th, 9th and 10th which was prior to the major rainfall starting on the 11th. Although the coliform concentrations measured in July were considerably lower than those measured in February, the USPHS shellfish standard was violated at seven of the fourteen stations (Table VII).

Following the completion of the water quality phase of the study, there was a period of general, and moderately heavy, rainfall in the study area. During this period, wastes from five of the septic tanks where dye had been injected were observed at the ground surface indicating the failure of these septic

sorption systems. The dyed septic tank leachate ponded in the vicinity of these systems and subsequently moved laterally to adjacent surface waterways. Overland movement of the leachates to the receiving surface waters was quite rapid at some of the test sites.

Samples of the dyed leachate were collected and analyzed for total and fecal coliform densities. Total coliform densities in the leachate samples ranged from 14,100 to >2,400,000/100 ml and fecal coliform densities ranged from 460 to >2,400,000/100 ml (Appendix A). These high indicator densities are indicative of raw or partially treated sewage.

Several surface water samples were collected adjacent to well stations 8, 13, 14, and 15 (Stations W-8C; W-13-C; W-14-C; W-15-C) where the dyed leachate was mixed with the surface water. Total and fecal coliform densities measured in the dyed surface waters ranged from 22,000 to >240,000/100 ml and 330 to 13,000/100 ml respectively (Appendix A). These high coliform densities were indicative of significant fecal contamination and were similar to the densities measured in the February study when significant runoff occurred. The high coliform densities observed in February were at least partially the result of septic system failures such as those documented with dye studies in July. An indication of the dramatic degrading effect that runoff containing the septic tank leachates can have on surface water quality is seen by comparing the July pre-rainfall coliform densities to the densities measured during the rainfall period. During the rainfall period, a sample collected within 50 yards of

station 6 (Station W-8C) (Figure 1) had total and fecal coliform densities of 34,800 and 2300/100 ml respectively; whereas, the maximum densities measured at station 6 during July prior to the rainfall were 212 total coliform/100 ml and 49 fecal coliform/100 ml (Appendix A).

The high percentage of septic tank systems failures in areas where groundwater levels are high have been noted by other investigators. Data collected during this investigation indicate that septic tank systems within the study area serve as as a major source of bacterial and chemical contaminants and exert a detrimental effect on adjacent surface water quality. These detrimental effects are largely observed during periods of rainfall when wastes from these systems are expedited to the waterways.

Wastes from malfunctioning septic systems that reach the ground surface and form pools of raw or partially treated sanitary waste constitute both a sanitary nuisance and health hazard. Exposure through direct contact with these wastes enhances the probability of contracting a bacterial, viral or protozoan infection and/or disease. The potential for disease transmission can exist for an indeterminant period of time following recession of waste pooling as a result of surface soil contamination. Survival of pathogenic organisms in contaminated soil will vary depending on the nature of the soil, organism, and a variety of environmental factors.

Groundwater Quality - July

The twelve well stations were sampled four times over a two-day period to determine the bacterial quality of the groundwater systems. The sampling method was the same as used during the February phase of the study. The bacteriological data are contained in Appendix A and summarized in Table VIII.

Mean fecal coliform densities measured at all test wells were very low (<3/100 ml). Mean total coliform densities measured ranged from <2/100 ml to <14/100 ml. Five individual well samples from the initial set collected had total coliform densities that ranged from 49/100 ml to 172/100 ml. However, total coliform densities of the well samples collected on the subsequent runs were much lower as is indicated by the low mean densities for all well stations (Table VIII).

The low mean total and fecal coliform densities measured indicate little fecal bacteria contamination of the groundwater aquifer at the well sampling locations. The elevated total coliform densities measured on the initial set of samples possibly resulted from external contamination of the wells at the time of initial sampling.

POINT SOURCE WASTE DISCHARGES

Two major point source waste discharges were identified in the study area. Both of these waste discharges, Holly Ridge Sewage Treatment Plant and Carolina Meat Processors, are located in the town of Holly Ridge, NC.

Bacterial quality of these two major point source waste discharges was determined from samples collected on July 11.

Although sampling of the discharges was limited, the data are sufficient to indicate the poor quality of these effluents. Effluent samples from the Holly Ridge STP (HRSTP) had mean total and fecal coliform densities of approximately 9,200,000/100 ml and 1,700,000/100 ml, respectively (Appendix A). These high coliform concentrations are characteristic of untreated sanitary waste. A portion of the sewered wastes bypassed the treatment facility and was discharged to Kings Creek immediately upstream from the plant. One sample collected from this bypass had total and fecal coliform densities of 13,000,000/100 ml and 780,000/100 ml, respectively. The similarity of coliform densities measured in the treatment plant effluent and untreated bypass reflects the absence of treatment provided by the Holly Ridge facility.

The bacterial quality of Kings Creek was measured at station KC, located approximately 1.5 miles downstream from the Holly Ridge STP discharge at State Road 1534 (Figure 1). Mean total and fecal coliform densities at this station were 49,000/100 ml and 9500/100 ml, respectively (Table VIII). These concentrations, as expected, indicate the presence of significant fecal contamination.

The proximity of the Holly Ridge STP to shellfish harvesting waters at the mouth of Kings Creek together with high coliform densities in the surrounding waters resulted in the closure of approximately 212 acres of harvesting waters in 1944. This area remains closed to date. Coliform data collected by the NC Shellfish Monitoring Program in the vicinity of the confluence of Kings Creek and the Intracoastal Waterway continue to indicate

excessive coliform contamination in this area. During February, total and fecal coliform densities in excess of 1100/100 ml at the mouth of Kings Creek (station 12) reflected the coliform contribution from Kings Creek (Table V).

The untreated industrial and sanitary waste discharge from the Carolina Meat Processors plant located at Holly Ridge was sampled at a drainage ditch (station GS) less than 1/4 mile downstream from the plant. This waste source discharges into a drainage ditch which enters Cypress Creek and subsequently enters the Intracoastal Waterway via Batts Mill Creek (also called Beasleys Creek, County Line Branch, and Barlow Creek), (Figure 1).

Mean total and fecal coliform concentrations detected at station GS were 2,400,000/100 ml and 1,960,000/100 ml, respectively (Table VIII). Additional samples were collected from Cypress Creek at State Road 1540, (Station CC) approximately 2 miles downstream from the plant discharge (Figure 1). Mean total and fecal coliform densities were reduced to 760,000/100 ml and 65,000/100 ml, respectively (Table VIII). However, these concentrations indicated that significant fecal contamination persists at this downstream point.

Coliform data collected at the mouth of Batts Mill Creek, as part of the North Carolina Shellfish Monitoring Program, have failed to indicate that coliform discharges to Cypress Creek significantly affect the bacterial quality of the Intracoastal Waterway. Past monitoring data in this area have demonstrated bacterial quality sufficient to maintain this area open to

shellfish harvesting. However, during February, mean total and fecal coliform densities of greater than 1100/100 ml indicated that significant fecal wastes entered the waterway via Batts Mill Creek (station 10), Table V).

At present, both the town of Holly Ridge and Carolina Meat Processors plant provide little or no treatment of their wastes. Both discharges contribute significant bacterial contamination to Kings and Cypress Creeks. The effect of these waste discharges on shellfish harvesting waters is more pronounced in the Kings Creek area than in the Batts Mill Creek area.

Both the town of Holly Ridge and Carolina Meat Processors have, or are developing, plans for the construction of adequate waste treatment facilities. Every effort should be made by local, state, and federal authorities to expedite the construction of these facilities and eliminate these poor quality waste discharges.

SEPTIC TANK LEACHATE TRACING

Septic tank leachate tracing studies were conducted in the study area to document the movement of wastewaters in the shallow groundwater and ultimately to adjacent surface waters.

Leachate tracing was accomplished by introducing a fluorescent dye (Rhodamine WT) into six randomly selected septic tank systems. Prior to injection, shallow well points were driven into the water-table groundwater aquifer. The wells were 1 1/4 inches in diameter and ranged in total depth from 5.0 to 9.0 feet below land surface. Screened intervals varied from 2.6 to 8.6 feet below land surface. These well points were located both up and down gradient from the septic tank systems. Two to three gallons (8-12 liters) of dye was introduced into each disposal system via house drains. Subsequent dye movement was monitored with automatic sequential samplers at down gradient well points and at the edge of the nearest canal. Samplers were programmed to collect samples hourly into individual bottles. A microfluorometer was used to measure the concentration of dye in the samples.

The principal substrate at each site was fine sand. Groundwater elevations in the test wells varied from 1.0 to 3.49 feet below ground surface in February and July. During periods of moderate intensity rainfall, water levels in the wells varied from 0.35 to 2.78 feet below land surface. As reported by Shiver and Register (1976), groundwater (water-table aquifer) movement is in the direction of the adjacent estuarine waters.

Leachate Travel Times

Results of the leachate tracing studies are given in Table X and Figures 19 through 23. At the six septic tank systems studied, dye was observed at five downgradient test wells within elapsed times of 69 - 82.5 hours. The dye surfaced near the drainfield and flowed into adjacent surface waters of the four systems (well stations 8, 13, 14, and 15) while at well station 7, dye traveled into the canal via a small drainage ditch which intercepted the leach field. The ponding dyed leachate was not subjected to fluorometric analyses as the presence of dye was visually evident.

Dye was observed on the ground surface in the vicinity of the leach fields in substantially less time than required for dye detection at the well points. Since the primary movement of the tracer dye was via surface runoff following moderate rainfall, it is pertinent to present rainfall, data (Figures 19 through 24) Since no dye was detected in the test wells prior to rainfall, it is possible that the test wells may have been contaminated by surface waters subsequent to the rainfall. Irrespective of the pathway, the tracer results conclusively demonstrated that septic tank leachates were contaminating the shallow water aquifer.

The leachate tracing studies clearly demonstrate that recharge in the water-table aquifer following moderate rainfall results in septic leachates rising to ground surfaces and subsequently flowing to adjacent waterways. Overland runoff following rainfall in the area is a significant source of chemical and bacterial contamination.

TABLE X
RESULTS OF LEACHATE TRACING
SURF CITY AND OCEAN SETTLERS BEACH, NC
JULY 1975

Well/ Canal	Time of Dye Injection	Dye Ponding Near Septic Tank System	Dye Visible in Canal	Dye Measureable in Canal	Dye Measureable in Well	Elapsed[1] Time to Well	Elapsed[1] Time to Canal	Elapsed[1] Time to Ponding
2	1530 8 Jul	-	NA	NA	-	-	NA	-
2C	NA	NA	-	-	NA	NA	-	NA
7	1615 8 Jul	-	NA	NA	1300 11 Jul	69 hr	NA	-
7C	NA	NA	1400 12 Jul	2100 12 Jul	NA	NA	94 hr	NA
8	1700 8 Jul	1200 9 Jul	NA	NA	1900 11 Jul	74	NA	19 hr
8C	NA	NA	0900 12 Jul	2100 11 Jul	NA	NA	76	NA
13	1030 9 Jul	0930 12 Jul	NA	NA	2100 12 Jul	82.5	NA	71
13C	NA	NA	0930 12 Jul	0500 13 Jul	NA	NA	71	NA
14	1100 9 Jul	1700 12 Jul	NA	NA	2100 12 Jul	82	NA	77
14C	NA	NA	1700 12 Jul	1600 12 Jul	NA	NA	76	NA
15	1130 9 Jul	0930 12 Jul	NA	NA	1400 12 Jul	74.5	NA	70
15C	NA	NA	0930 12 Jul	1900 12 Jul	NA	NA	70	NA

1. Elapsed time from dye injection.

FIGURE 19

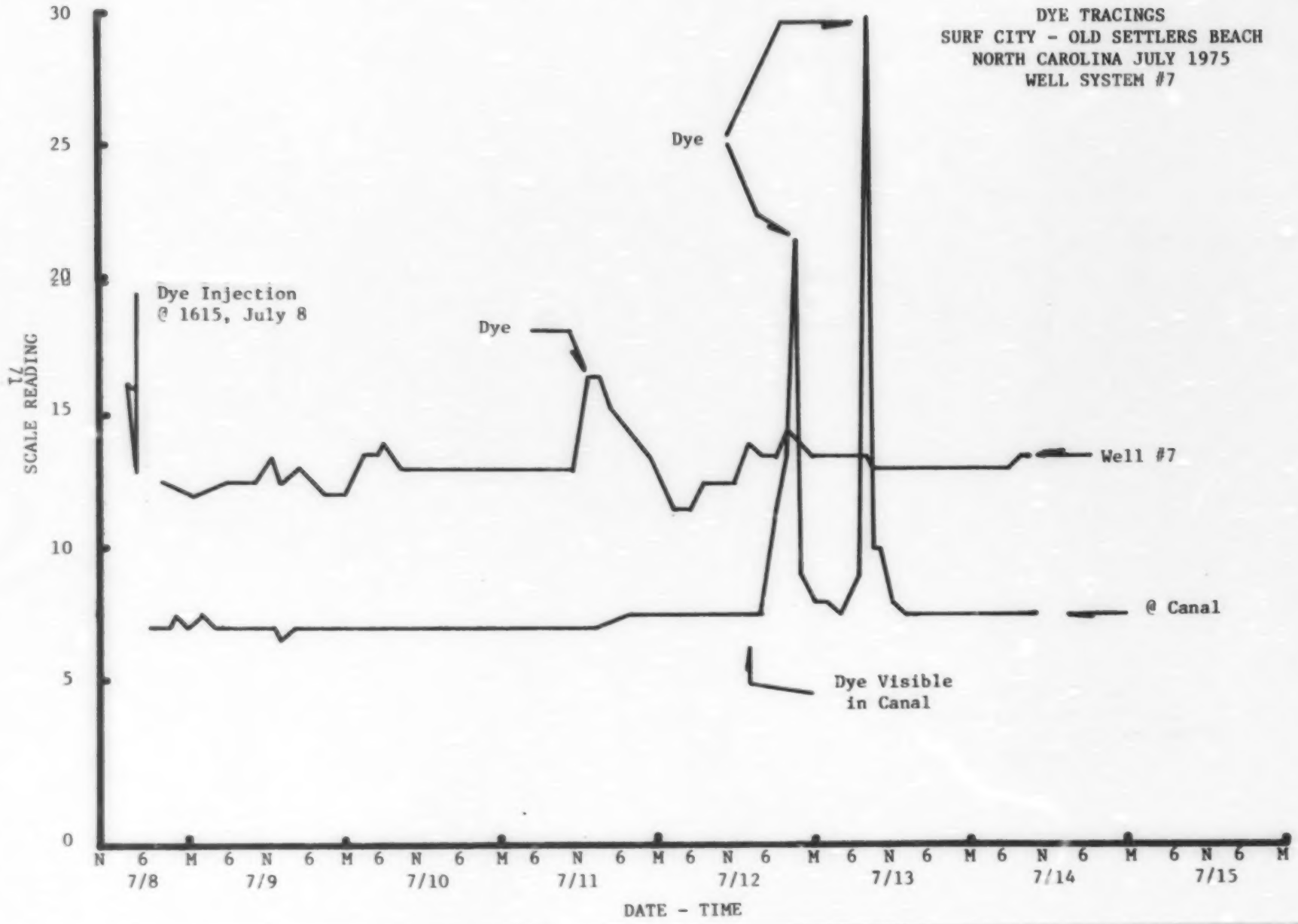

DYE TRACINGS
SURF CITY - OLD SETTLERS BEACH
NORTH CAROLINA JULY 1975
WELL SYSTEM #7
Dye
Dye Injection
@ 1615, July 8
Dye
Well #7
@ Canal
Dye Visible
in Canal
SCALE READING
30
25
20
15
10
5
0
N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M
7/8
7/9
7/10
7/11
7/12
7/13
7/14
7/15
DATE - TIME

FIGURE 20

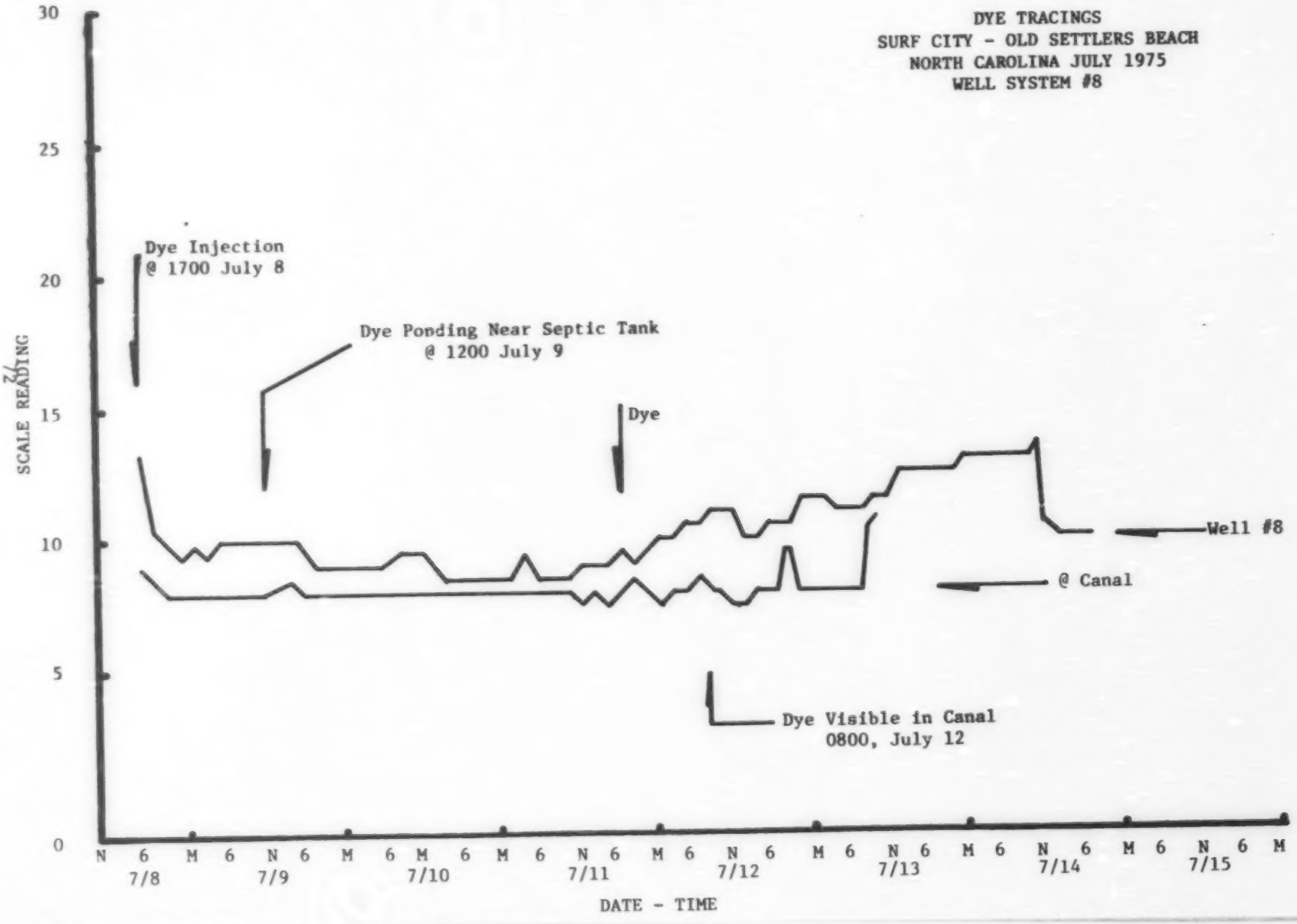

DYE TRACINGS
SURF CITY - OLD SETTLERS BEACH
NORTH CAROLINA JULY 1975
WELL SYSTEM #8
SCALE READING %
30
25
20
15
10
5
0
Dye Injection
@ 1700 July 8
Dye Ponding Near Septic Tank
@ 1200 July 9
Dye
Well #8
@ Canal
Dye Visible in Canal
0800, July 12
N 6 M 6 N 6 M 6 M 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M
7/8
7/9
7/10
7/11
7/12
7/13
7/14
7/15
DATE - TIME

FIGURE 21

DYE TRACINGS
SURF CITY - OLD SETTLERS BEACH
NORTH CAROLING JULY 1975
WELL SYSTEM #13

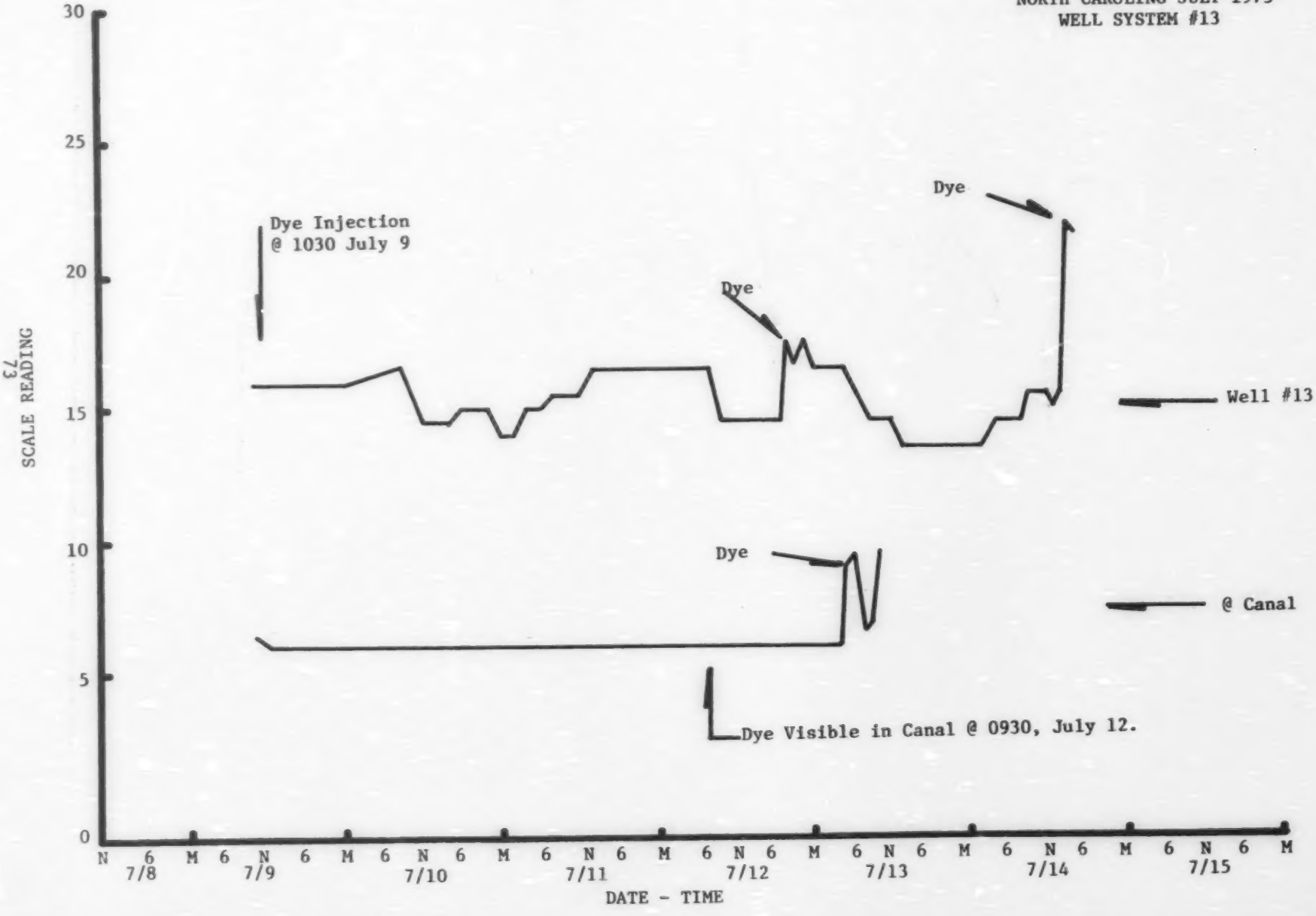


FIGURE 22

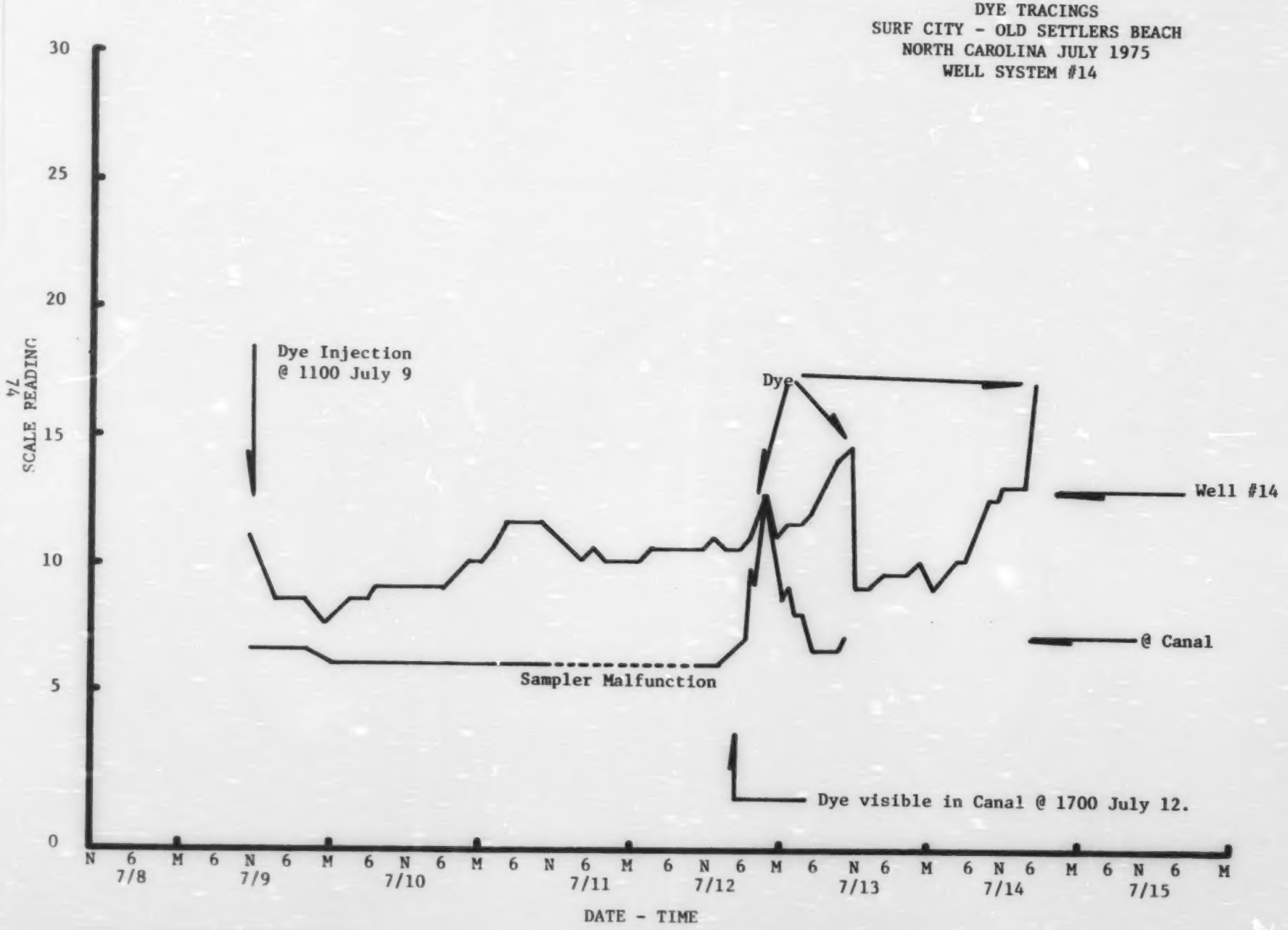

DYE TRACINGS
SURF CITY - OLD SETTLERS BEACH
NORTH CAROLINA JULY 1975
WELL SYSTEM #14
SCALE READING
74
30
25
20
15
10
5
0
Dye Injection
@ 1100 July 9
Dye
Well #14
@ Canal
Sampler Malfunction
Dye visible in Canal @ 1700 July 12.
N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M
7/8
7/9
7/10
7/11
7/12
7/13
7/14
7/15
DATE - TIME

FIGURE 23

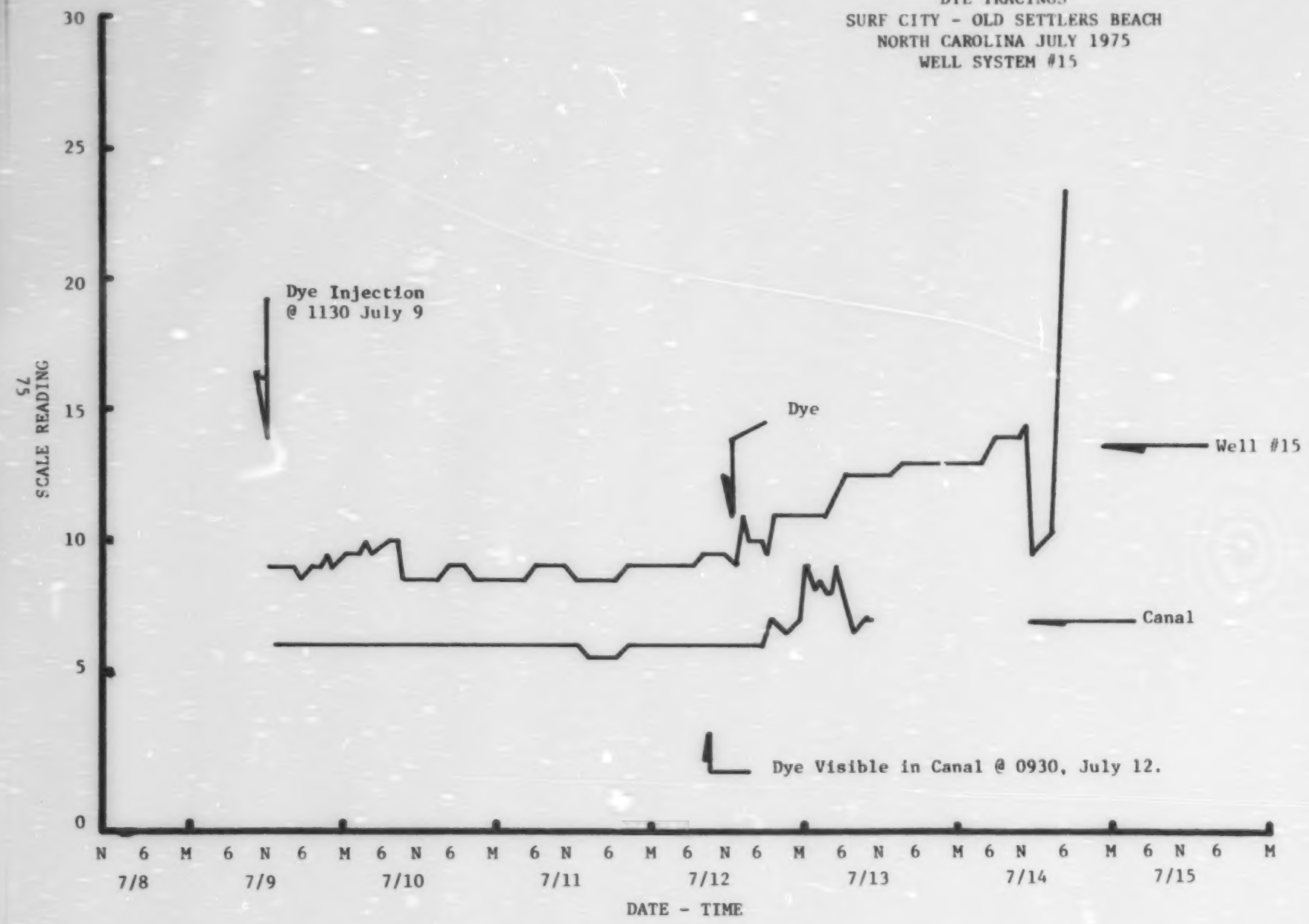
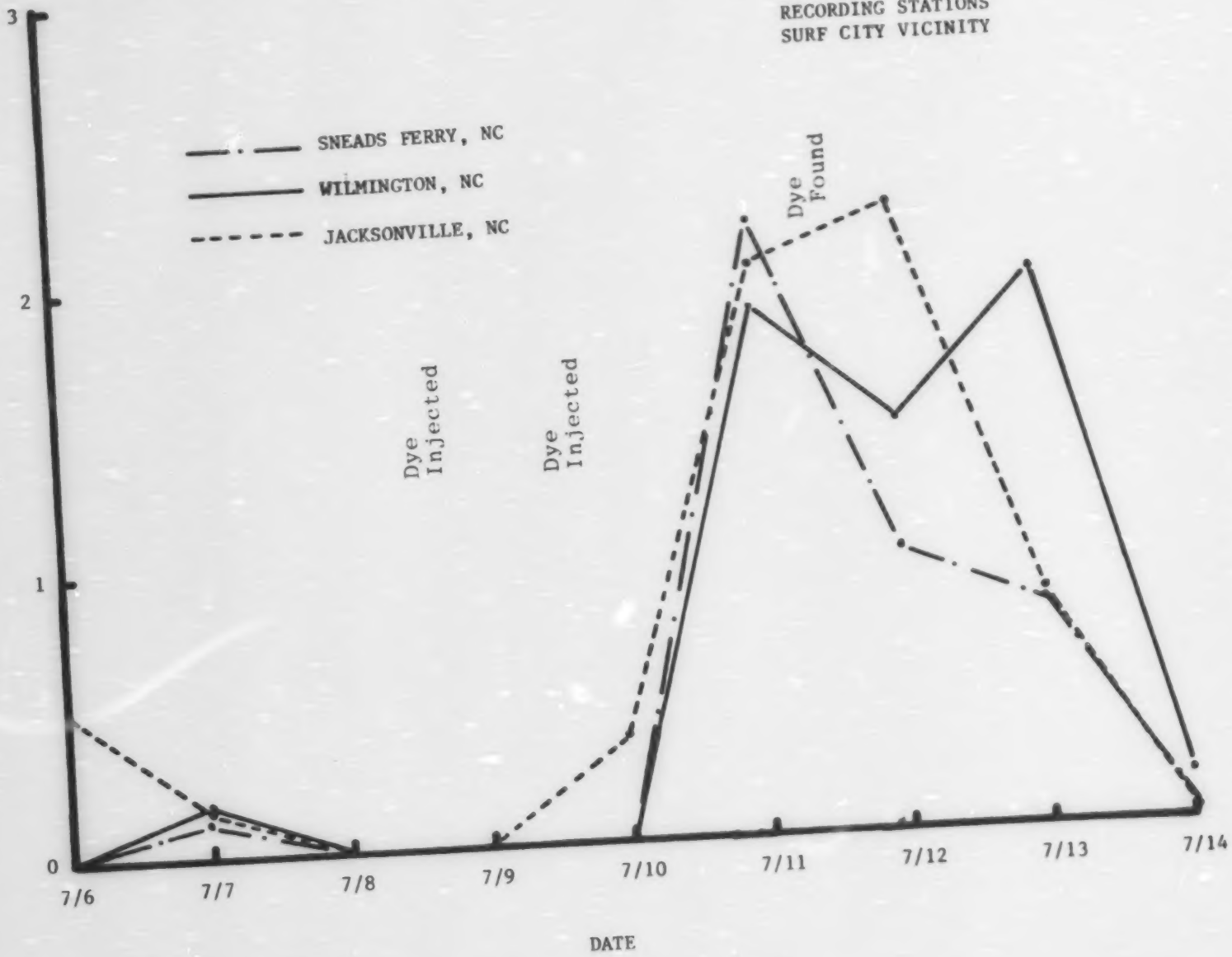

DYE TRACINGS
SURF CITY - OLD SETTLERS BEACH
NORTH CAROLINA JULY 1975
WELL SYSTEM #15
30
25
20
15
10
5
0
SCALE READING
Dye Injection
@ 1130 July 9
Dye
Well #15
Canal
Dye Visible in Canal @ 0930, July 12.
N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M 6 N 6 M
7/8
7/9
7/10
7/11
7/12
7/13
7/14
7/15
DATE - TIME

FIGURE 24
DAILY RAINFALL
RECORDING STATIONS
SURF CITY VICINITY



SURF CITY

AGENCY	PRIMARY STATION	SECONDARY	STATION LOCATION	STATE	MINOR BASIN
11135000	373265	FF-CC	CYPRESS CK-AT STATE ROAD 1540	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373270	FF-GS	CYPRESS CK-AT GREEN ST IN HR, NC	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373255	FF-HR-BP	KINGS CK-SEWAGE BYPASS FRM HR,NC	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373250	FF-HR-STP	KINGS CK-EFF FRM HOLLY RIDGE, NC	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373260	FF-KC	KINGS CK-AT STATE ROAD 1534	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373100	FF-SURF-001	INTRACOASTAL WW SW OF SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373105	FF-SURF-002	INTRACOASTAL WW N OF SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373110	FF-SURF-003	INTRACOASTAL WW NW OF SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373115	FF-SURF-004	INTRACOASTAL WW AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373120	FF-SURF-005	INTRACOASTAL WW AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373125	FF-SURF-006	INTRACOASTAL WW AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373140	FF-SURF-009	INTRACOASTAL WW NE OF SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373145	FF-SURF-010	BARLOW CK AT MOUTH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373155	FF-SURF-012	KINGS CK-AT MOUTH & N END OF ISL	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373160	FF-SURF-013	INTRACOASTAL WW N OF W.ONSLOW BE	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373165	FF-SURF-014	CANAL NW OF W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373170	FF-SURF-015	CANAL NW OF W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373175	FF-SURF-016	CANAL W OF W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373180	FF-SURF-017	CANAL W OF W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373185	FF-SURF-018	CANAL W OF W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373190	FF-W-002	WELL AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373191	FF-W-002C	CANAL ADJACENT WELL NO. 2	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373195	FF-W-003	WELL AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373200	FF-W-006	WELL AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373205	FF-W-007	WELL AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373206	FF-W-007C	CANAL ADJACENT WELL NO. 7	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373210	FF-W-008	WELL AT SURF CITY	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373211	FF-W-008C	CANAL ADJACENT WELL NO. 8	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373215	FF-W-009	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373220	FF-W-010	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373225	FF-W-011	WELL AT CANAL NR W.ONSLWO BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373230	FF-W-012	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373235	FF-W-013	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373236	FF-W-013C	CANAL ADJACENT WELL NO. 13	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373240	FF-W-014	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373241	FF-W-014C	CANAL ADJACENT WELL NO. 14	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373245	FF-W-015	WELL AT CANAL NR W.ONSLOW BEACH	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373246	FF-W-015C	CANAL ADJACENT WELL NO. 15	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373280	FF-W-08-POND	SURF CTY-PONDING NR WELL # 8	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373285	FF-W-08C-DYE	SURF CTY-CANAL NR WELL # 8	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373290	FF-W-13-POND	SURF CTY-PONDING NR WELL # 13	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373295	FF-W-13C-DYE	SURF CTY-CANAL NR WELL # 13	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373300	FF-W-14-POND	SURF CTY-PONDING NR WELL # 14	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373305	FF-W-14C-DYE	SURF CTY-CANAL NR WELL # 14	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373310	FF-W-15-POND	SURF CTY-PONDING NR WELL # 15	NORTH CAROL	N.C.COASTAL AREA FINGER FIL
	373315	FF-W-15C-DYE	SURF CTY-CANAL NR WELL # 15	NORTH CAROL	N.C.COASTAL AREA FINGER FIL

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750219	0815	1	50	14.3	2000	7.9			24.2	
750219	0816	2	50	14.3	2000	7.9			24.2	
750219	0817	3	50	14.4	2000	7.9			24.2	
750219	0818	4	50	14.4	2000	7.9			24.2	
750219	0819	5	50	14.4	2000	8.0			24.2	
750219	0820	6	50	14.4	2000	8.0		7.9	24.1	
750219	0821	7	50	14.4	2000	7.9			24.1	
750219	0822	8	50	14.4	2000	7.9			24.2	
750219	0823	9	50	14.3	2000	8.0			24.1	
750219	0824	10	50	14.3	2000	8.0			24.1	
750219	0825	11	50	14.3	2000	8.0			24.1	
750219	0826	12	50	14.3	2000	8.0			24.1	
750219	1455	1	50	15.0	2000	7.2			24.5	
750219	1456	2	50	15.0	2000	7.2			24.5	
750219	1457	3	50	15.0	2000	7.2			24.5	
750219	1458	4	50	15.5	2000	7.2			24.5	
750219	1459	5	50	15.0	2000	7.2			25.0	
750219	1500	6	50	15.0	2000	7.2			22.5	
750219	1501	7	50	15.0	2000	7.2			24.5	
750219	1502	8	50	15.0	2000	7.2			24.5	
750219	1503	9	50	15.0	2000	7.2		8.0	24.5	
750219	1504	10	50	15.0	2000	7.2			24.5	
750219	1505	11	50	15.0	2000	7.2			24.5	
750219	1506	12	50	15.0	2000	7.2			24.7	
750219	1507	13	50	15.0	2000	7.2			24.7	
750219	1508	14	50	15.0	2000	7.2			24.7	
750219	1509	15	50	15.0	2000	7.2			24.7	
750220	1100	1	50	14.0	2000	9.1			21.0	
750220	1101	2	50	14.0	2000	9.2			21.0	
750220	1102	3	50	14.0	2000	9.2			21.0	
750220	1103	4	50	14.0	2000	9.2			21.0	
750220	1104	5	50	14.0	2000	9.2			21.0	
750220	1105	6	50	14.0	2000	9.2			21.0	
750220	1106	7	50	14.0	2000	9.2		8.0	21.0	
750220	1107	8	50	14.0	2000	9.2			21.0	
750220	1108	9	50	14.0	2000	9.2			21.0	
750220	1109	10	50	14.0	2000	9.2			21.0	
750220	1110	11	50	14.0	2000	9.2			21.0	
750220	1111	12	50	14.0	2000	9.2			21.0	
750220	1112	13	50	14.0	2000	9.2			21.0	
750220	1113	14	50	14.0	2000	9.2			21.0	
750220	1727	1	50	13.0	2000	8.4			22.5	
750220	1728	2	50	13.0	2000	8.4			22.5	
750220	1729	3	50	13.6	2000	8.3			23.0	
750220	1730	4	50	13.6	2000	8.3			23.5	

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750220	1731	5	50	13.6	2000	8.2			25.0	
750220	1732	6	50	13.6	2000	8.2			25.0	
750220	1733	7	50	13.5	2000	8.2		7.6	25.5	
750220	1734	8	50	13.5	2000	8.2			25.5	
750220	1735	9	50	13.5	2000	8.2			25.5	
750220	1736	10	50	13.5	2000	8.2			25.0	
750220	1737	11	50	13.5	2000	8.2			25.0	
750220	1738	12	50	13.5	2000	8.2			25.5	
750220	1739	13	50	13.5	2000	8.2			25.5	
750220	1740	14	50	13.5	2000	8.2			25.5	
750324	0850	1		17.0	37	6.7		8.1	31.0	
750324	0850	6		17.0	37	6.7		8.1	31.0	
750324	1450	1		19.0	37	6.0		8.2	27.5	
750324	1450	6		19.0	37	6.0		8.2	27.5	
750422	0749	1		18.0	37	6.4		8.1	31.3	
750422	0749	6		18.0	37	6.4		8.1	31.3	
750422	1345	1		20.0	37	7.0		8.0	28.0	
750422	1345	6		20.0	37	7.0		8.0	28.0	
750520	0845	6		24.0	37	4.6		8.4	31.0	
750520	1400	6		25.0	37	5.0		8.5	31.0	
750623	1022	1			37					
750623	1505	1			37					
750708	1410	1		27.3	2000	6.3			34.4	
750708	1411	2		27.4	2000	6.2			34.3	
750708	1412	3		27.4	2000	6.2			34.4	
750708	1413	4		27.4	2000	6.2			34.3	
750708	1414	5		27.4	2000	6.2			34.2	
750708	1415	6		27.5	2000	6.2			34.4	
750708	1416	7		27.4	2000	6.2			34.4	
750708	1417	8		27.5	2000	6.2			34.5	
750708	1418	9		27.4	2000	6.1			34.4	
750708	1419	10		27.4	2000	6.1			34.4	
750708	1420	11		27.3	2000	6.2			34.4	
750708	1421	12		27.4	2000	6.2			34.4	
750708	1422	11		27.3	2000				34.4	
750708	1630	1		27.8	2000	6.6			34.0	
750708	1631	2		27.8	2000	6.5			34.0	
750708	1632	3		27.8	2000	6.5			34.0	
750708	1633	4		27.8	2000	6.4			34.0	
750708	1634	5		27.9	2000	6.4			34.0	
750708	1635	6		27.8	2000	6.4			34.1	
750708	1636	7		27.8	2000	6.5		8.0	34.0	
750708	1637	8		27.8	2000	6.5			34.0	
750708	1638	9		27.8	2000	6.5			34.1	
750708	1639	10		27.9	2000	6.5			34.2	

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750708	1640	11		27.8	2000	6.5			34.1	
750708	1641	12		27.9	2000	6.5			34.0	
750708	1642	13		28.0	2000	6.5			34.1	
750708	1643	14		27.8	2000				34.2	
750708	1925	1		27.8	2000	6.8			34.3	
750708	1926	2		27.8	2000	6.8			34.3	
750708	1927	3		27.8	2000	6.8			34.3	
750708	1928	4		27.8	2000	6.8			34.3	
750708	1929	5		27.8	2000	6.8			34.2	
750708	1930	6		27.7	2000	6.7			34.2	
750708	1931	7		27.8	2000	6.7			34.1	
750708	1932	8		27.8	2000	6.7			34.2	
750708	1933	9		27.7	2000	6.7			34.2	
750708	1934	10		27.8	2000	6.7			34.3	
750708	1935	11		27.7	2000	6.7			34.2	
750708	1936	12		27.8	2000	6.7			34.1	
750708	1937	13		27.7	2000	6.6			34.2	
750708	1938	14		27.8	2000				34.1	
750708	2200	1		27.5	2000	6.3			35.3	
750708	2201	2		27.7	2000	6.3			35.4	
750708	2202	3		27.7	2000	6.3			35.4	
750708	2203	4		27.7	2000	6.3			35.4	
750708	2204	5		27.6	2000	6.2		7.9	35.4	
750708	2205	6		27.7	2000	6.2			35.2	
750708	2206	7		27.7	2000	6.2			35.0	
750708	2207	8		27.8	2000	6.2			35.1	
750708	2208	9		27.7	2000				35.0	
750709	0115	1		27.5	2000	6.5			35.5	
750709	0116	2		27.3	2000	6.1			35.3	
750709	0117	3		27.2	2000	6.1			35.4	
750709	0118	4		27.3	2000	6.0			35.4	
750709	0119	5		27.3	2000	6.0			35.5	
750709	0120	6		27.3	2000	6.0			35.5	
750709	0121	7		27.3	2000	6.2			35.5	
750709	0122	8		27.3	2000	5.9			35.5	
750709	0123	9		27.3	2000	5.8			35.5	
750709	0124	10		27.3	2000	5.9			35.5	
750709	0125	11		27.3	2000	5.8			35.5	
750709	0126	12		27.3	2000	5.8			35.5	
750709	0127	13		27.3	2000	5.9			35.5	
750709	0128	14		27.2	2000	5.8			35.5	
750709	0129	15		27.3	2000	5.6			35.5	
750709	0130	16		27.3	2000				35.3	
750709	0410	1		27.1	2000	5.8			35.3	
750709	0411	2		27.2	2000	5.8			35.4	

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 MSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WT. MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750709	0412	3		27.2	2000	5.8			35.2	
750709	0413	4		27.3	2000	5.8			35.2	
750709	0414	5		27.1	2000	5.8			35.3	
750709	0415	6		27.2	2000	5.8			35.2	
750709	0416	7		27.1	2000	5.8			35.3	
750709	0417	8		27.1	2000	5.8		7.9	35.2	
750709	0418	9		27.1	2000	5.8			35.2	
750709	0419	10		27.1	2000	5.8			35.2	
750709	0420	11		27.2	2000	5.8			35.3	
750709	0421	12		27.2	2000	5.8			35.3	
750709	0422	13		27.2	2000	5.8			35.2	
750709	0423	14		27.2	2000	5.8			35.2	
750709	0424	15		27.1	2000				35.0	
750709	0745	1		26.9	2000	5.8			34.8	
750709	0746	2		26.9	2000	5.8			34.8	
750709	0747	3		27.0	2000	5.8			34.8	
750709	0748	4		26.9	2000	5.8			34.9	
750709	0749	5		26.9	2000	5.8			34.9	
750709	0750	6		26.9	2000	5.8			34.8	
750709	0751	7		27.0	2000	5.8			34.8	
750709	0752	8		27.0	2000	5.8			34.8	
750709	0753	9		26.9	2000	5.8			34.8	
750709	0754	10		26.9	2000	5.7			34.8	
750709	0755	11		26.9	2000	5.7			34.8	
750709	0756	12		26.8	2000	5.6			34.8	
750709	0757	13		26.9	2000	5.6			34.8	
750709	0758	14		26.9	2000	5.6			34.8	
750709	0759	15		27.0	2000				34.8	
750709	1040	1		27.4	2000	5.8			35.1	
750709	1041	2		27.2	2000	6.0			35.1	
750709	1042	3		27.4	2000	5.8			35.2	
750709	1043	4		27.5	2000	5.8			35.4	
750709	1044	5		27.4	2000	5.8			35.2	
750709	1045	6		27.4	2000	5.8			35.2	
750709	1046	7		27.4	2000	5.7			35.3	
750709	1047	8		27.1	2000	5.7			35.1	
750709	1048	9		27.1	2000	5.6			35.1	
750709	1049	10		27.1	2000	5.6			35.1	
750709	1050	11		27.1	2000	5.6			35.2	
750709	1051	12		27.2	2000	5.6			35.1	
750709	1052	13		27.2	2000				35.2	
750709	1340	1		28.3	2000	6.7			35.2	
750709	1341	2		28.5	2000	6.3			35.3	
750709	1342	3		28.0	2000	6.2			35.3	
750709	1343	4		28.0	2000	6.2			35.1	

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750709	1344	5		28.0	2000	6.2			35.2	
750709	1345	6		27.9	2000	6.2			35.3	
750709	1346	7		27.9	2000	6.3			35.2	
750709	1347	8		27.8	2000	6.3			35.2	
750709	1348	9		28.0	2000	6.2			35.2	
750709	1349	10		28.0	2000	6.1			35.2	
750709	1350	11		27.9	2000	6.2			35.3	
750709	1351	12		27.8	2000				35.2	
750710					2000		5400			26.20
750219										
NUMBER		188		186	189	177	1	17	186	1
MAXIMUM		10		28.5	2000	9.2		8.5	35.5	
MINIMUM		1		13.0	37	4.6		7.6	21.0	
MEAN		7		23.1	1875	6.7		8.1	31.2	
LOG MEAN		6		22.2	1552	6.7		8.1	30.7	
750710										

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219	0820	6	0.03	0.18		0.01	0.60		6.5	
750219	1503	9							4.0	
750220	1106	7							7.5	
750220	1733	7	0.04	0.22		0.01	0.05		5.5	
750324	0850	1	0.05K	0.30		0.05K	0.06		30.0K	
750324	0850	6	0.05K	0.30		0.05K	0.06		30.0K	
750324	1450	1	0.05K	0.50		0.05K	0.06		30.0K	
750324	1450	6	0.05K	0.50		0.05K	0.06		30.0K	
750422	0749	1	0.05K	0.50		0.05K	0.06		53.0	
750422	0749	6	0.05K	0.50		0.05K	0.06		53.0	
750422	1345	1	0.05K	0.50		0.05K	0.09		20.0	
750422	1345	6	0.05K	0.50		0.05K	0.09		20.0	
750708	1636	7	0.19	0.20		0.01K	0.21		6.0	
750708	2204	5	0.19	0.18		0.01K	1.23		6.9	
750709	0417	8	0.16	0.18		0.01K	0.07		4.3	
750709	1045	6	0.14	0.25		0.01K	0.08		4.5	
750710					650			1150.0		1.00K

STATION - FF-SURF-001 INTRACOASTAL WW SW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MG/KG-N	00630 NO2&NO3 N MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219										
NUMBER		188	14	14	1	14	14	1	16	1
MAXIMUM		16	0.19	0.50		0.01	1.23		53.0	
MINIMUM		1	0.03K	0.18		0.01K	0.05		4.0K	
MEAN		7	0.08	0.34		0.03	0.20		19.4	
LOG MEAN		6	0.07	0.31		0.03	0.10		13.1	
750710										

DATE	TIME	00003 DEPTH FEET	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT
750219	0815	1						1100L	460	
750220	1100	1						1100	460	
750220	1727	1						1100L	460	
750324	0850	1						240	29	
750324	1450	1						43	43	
750422	0749	1						4	4	
750422	1345	1						3	3K	
750623	1022	1						3K	3K	
750623	1505	1						4	3K	
750708	1630	1						23	5	
750708	2200	1						8	2	
750709	0410	1						13	8	
750709	1040	1						5	2	
750710			6.60	1.00	7.50	2.50	8.60			1.0
750219										
NUMBER		188	1	1	1	1	1	13	13	1
MAXIMUM		16						1100L	460	
MINIMUM		1						3K	2K	
MEAN		7						280	114	
LOG MEAN		6						30	15	
750710										

STATION - FF-SURF-002 INTRACOASTAL WW N OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750219	0755	1	50	14.5	2000	8.4			24.1	
750219	0756	2	50	14.5	2000	8.1			24.2	
750219	0757	3	50	14.5	2000	7.9			24.1	
750219	0800	4	50	14.3	2000	7.8		7.9	24.1	
750219	0801	5	50	14.3	2000	7.6			24.3	
750219	0802	6	50	14.3	2000	7.6			24.1	
750219	0803	7	50	14.3	2000	7.6			24.1	
750219	0804	8	50	14.3	2000	7.6			24.1	
750219	0805	9	50	14.3	2000	7.6			24.1	
750219	0806	10	50	14.3	2000	7.6			23.9	
750219	1430	1	50	15.5	2000	7.6			23.5	
750219	1431	2	50	15.0	2000	7.8			23.5	
750219	1432	3	50	15.0	2000	7.3			23.7	
750219	1433	4	50	14.9	2000	7.4			24.0	
750219	1434	5	50	15.5	2000	7.4		7.1	23.0	
750219	1435	6	50	15.5	2000	7.3			23.0	
750219	1436	7	50	15.0	2000	7.3			23.5	
750219	1437	8	50	15.0	2000	7.3			23.7	
750219	1438	9	50	14.5	2000	7.2			21.0	
750220	1037	1	50	13.0	2000	8.4			19.3	
750220	1038	2	50	13.0	2000	8.4			19.5	
750220	1039	3	50	13.0	2000	8.3			19.5	
750220	1040	4	50	13.0	2000	8.3		8.0	19.5	
750220	1041	5	50	13.0	2000	8.3			19.5	
750220	1042	6	50	13.0	2000	8.3			19.5	
750220	1043	7	50	13.0	2000	8.3			19.5	
750220	1044	8	50	13.0	2000	8.3			19.5	
750220	1045	9	50	13.0	2000	8.3			19.5	
750220	1748	1	50	13.0	2000	8.6			21.0	
750220	1749	2	50	13.0	2000	8.6			21.5	
750220	1750	3	50	12.5	2000	8.6			21.5	
750220	1751	4	50	12.5	2000	8.6			22.0	
750220	1752	5	50	12.5	2000	8.7		7.5	22.0	
750220	1753	6	50	12.5	2000	8.6			22.0	
750220	1754	7	50	12.5	2000	8.6			22.5	
750220	1755	8	50	12.5	2000	8.6			22.5	
750220	1756	9	50	12.5	2000	8.6			22.5	
750220	1757	10	50	12.5	2000	8.6			22.5	
750324	0835	1		19.5	37	6.1		8.1	29.0	
750324	0835	5		19.5	37	6.1		8.1	29.0	
750324	1440	1		20.0	37	7.6		8.0	27.0	
750324	1440	5		20.0	37	7.6		8.0	27.0	
750422	0845	1		17.5	37	6.2		8.1	28.3	
750422	0845	5		17.5	37	6.2		8.1	28.3	
750422	1400	1		22.0	37	8.0		7.6	28.5	

SURF CITY

STATION - FF-SURF-002 INTRACOASTAL WW N OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC RT BANK	00010 WATER CENT	00027 COLLECT CODE	00299 DO MG/L	00339 COD MUD MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750422	1400	5		22.0	37	8.0		7.6	28.5	
750520	0845	5		23.0	37	4.0		8.4		
750520	1400	5		28.0	37	5.0		8.5		
750623	1010	1			37					
750623	1458	1			37				34.0	
750708	1440	1		28.5	2000	6.6			34.0	
750708	1441	2		28.8	2000	6.8			33.8	
750708	1442	3		28.7	2000	6.8			33.9	
750708	1443	4		28.5	2000	6.9			33.9	
750708	1444	5		28.7	2000	6.8			33.9	
750708	1444	5		28.7	2000	6.8			33.9	
750708	1445	6		28.6	2000	6.8			33.9	
750708	1446	7		28.6	2000	6.8			33.9	
750708	1447	8		28.4	2000	6.8			34.0	
750708	1448	9		28.5	2000			7.9	34.0	
750708	1640	1		29.0	2000	7.0			34.0	
750708	1641	2		28.8	2000				34.2	
750708	1940	1		28.4	2000	6.6			33.9	
750708	1941	2		28.5	2000	6.6			30.6	
750708	1942	3		28.4	2000				34.2	
750708	2215	1		27.8	2000	5.9			34.2	
750708	2216	2		27.7	2000	5.9		8.0	34.2	
750708	2217	3		27.8	2000	5.9			34.3	
750708	2218	4		27.8	2000	5.9			34.1	
750708	2219	5		27.8	2000				34.7	
750709	0140	1		27.5	2000	6.0			34.6	
750709	0141	2		27.5	2000	5.7			34.5	
750709	0142	3		27.5	2000	5.8			34.6	
750709	0143	4		27.5	2000	5.7			34.7	
750709	0144	5		27.5	2000				34.1	
750709	0430	1		27.1	2000	5.2			34.2	
750709	0431	2		27.1	2000	5.2		7.8	34.1	
750709	0432	3		27.1	2000	5.2			34.1	
750709	0433	4		27.0	2000	5.2			34.2	
750709	0434	5		27.1	2000				34.5	
750709	0800	1		26.9	2000	5.5			34.5	
750709	0801	2		26.8	2000	5.5			34.5	
750709	0802	3		26.8	2000	5.4			34.6	
750709	0803	4		26.8	2000	5.4			34.6	
750709	0804	5		26.9	2000	5.4			34.3	
750709	0805	6		26.8	2000				34.9	
750709	1055	1		27.5	2000	5.6			34.9	
750709	1056	2		27.5	2000	5.5			34.8	
750709	1057	3		27.4	2000	5.5			35.0	
750709	1058	4		27.4	2000	5.5			34.9	
750709	1059	5		27.5	2000	5.5				

STATION - FF-SURF-002 INTRACOASTAL WW N OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750709	1100	6		27.4	2000	5.5			35.0	
750709	1101	7		27.4	2000	5.5			34.9	
750709	1102	8		27.4	2000	5.5			34.9	
750709	1103	9		27.5	2000	5.5			34.9	
750709	1104	10		27.5	2000	5.5			34.8	
750709	1105	11		27.5	2000				34.8	
750709	1355	1		28.5	2000	6.6			34.8	
750709	1356	2		28.4	2000	6.6			34.9	
750709	1357	3		28.5	2000	6.6			34.9	
750709	1358	4		28.4	2000	6.5			34.9	
750709	1359	5		28.5	2000	6.5			34.9	
750709	1400	6		28.5	2000				34.9	
750710					2000		68100			47.80
750219										
NUMBER		102		100	103	91	1	17	98	1
MAXIMUM		11		29.0	2000	8.7		8.5	35.0	
MINIMUM		1		12.5	37	4.0		7.1	19.3	
MEAN		4		21.8	1771	6.9		7.9	29.2	
LOG MEAN		3		20.6	1256	6.8		7.9	28.5	
750710										

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219	0800	4	0.03	0.16		0.02	0.04		5.5	
750219	1434	5							4.0	
750220	1040	4							7.2	
750220	1752	5	0.04	0.22		0.02	0.04		6.8	
750324	0835	1	0.05K	0.40		0.05K	0.07		30.0K	
750324	0835	5	0.05K	0.40		0.05K	0.07		30.0K	
750324	1440	1	0.05K	0.30		0.05K	0.06		30.0K	
750324	1440	5	0.05K	0.30		0.05K	0.06		30.0K	
750422	0845	1	0.05K	0.60		0.05K	0.05		10.0K	
750422	0845	5	0.05K	0.60		0.05K	0.05		10.0K	
750422	1400	1	0.05K	0.40		0.05K	0.07		10.0K	
750422	1400	5	0.05K	0.40		0.05K	0.07		10.0K	
750708	1640	1	0.12	0.18		0.01K	0.11		7.7	
750708	2217	3	0.12	0.25		0.01K	0.12		5.8	
750709	0432	3	0.18	0.45		0.01K	0.44		9.0	
750709	1059	5	0.11	0.22		0.01K	0.10		5.0	
750710					2375			900.0		1.00K

STATION - FF-SURF-002 INTRACOASTAL WW N OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219										
NUMBER		102	14	14	1	14	14	1	16	1
MAXIMUM		11	0.18	0.60		0.02	0.44		9.0	
MINIMUM		1	0.03K	0.16		0.01K	0.04		4.0K	
MEAN		4	0.07	0.35		0.03	0.10		13.2	
LOG MEAN		3	0.06	0.32		0.03	0.08		10.4	
750710										

DATE	TIME	00003 DEPTH FEET	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT
750219	0755	1						1100L	460	
750220	1037	1						460	240	
750220	1748	1						1100	240	
750324	0835	1						75	20	
750324	1440	1						75	39	
750422	0845	1						9	3K	
750422	1400	1						3	3K	
750623	1010	1						9	9	
750623	1458	1						7	3	
750708	1640	1						130	33	
750708	2215	1						105	8	
750709	0430	1						260	14	
750709	1055	1						79	7	
750710			40.00	6.00	24.00	7.10	44.00			6.3
750219										
NUMBER		102	1	1	1	1	1	13	13	1
MAXIMUM		11						1100L	460	
MINIMUM		1						3	3K	
MEAN		4						262	83	
LOG MEAN		3						73	21	
750710										

STATION - FF-SURF-003 INTRACOASTAL WW NW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750219	0810	1	50	14.3	2000	7.9			24.1	
750219	0811	2	50	14.3	2000	7.8			24.0	
750219	0812	3	50	14.3	2000	7.7			24.2	
750219	0813	4	50	14.3	2000	7.7		7.9	24.2	
750219	1520	1	50	15.5	2000	7.4			23.0	
750219	1521	2	50	15.0	2000	7.4			23.0	
750219	1522	3	50	15.2	2000	7.4		7.9	23.5	
750219	1523	4	50	15.2	2000	7.2			23.5	
750219	1524	5	50	15.0	2000	7.2			24.0	
750220	1050	1	50	13.0	2000	8.8			19.5	
750220	1051	2	50	13.0	2000	8.8			19.5	
750220	1052	3	50	13.0	2000	8.8		8.0	19.5	
750220	1053	4	50	13.0	2000	8.8			19.5	
750220	1054	5	50	13.0	2000	8.8			19.5	
750220	1740	1	50	13.0	2000	8.5			21.5	
750220	1741	2	50	13.0	2000	8.4			22.5	
750220	1742	3	50	13.5	2000	8.3		7.8	23.0	
750220	1743	4	50	13.5	2000	8.2			23.0	
750220	1744	5	50	13.5	2000	8.2			23.0	
750220	1745	6	50	13.5	2000	8.2			23.0	
750324	0845	1		17.5	37	6.2		8.1	29.3	
750324	0845	2		17.5	37	6.2		8.1	29.3	
750324	1445	1		20.0	37	7.4		8.2	27.0	
750324	1445	2		20.0	37	7.4		8.2	27.0	
750422	0745	1		17.2	37	5.8		8.1	29.5	
750422	0745	2		17.2	37	5.8		8.1	29.5	
750422	1340	1		21.0	37	8.8		7.8	28.0	
750422	1340	2		21.0	37	8.8		7.8	28.0	
750520	0845	2		24.0	37	4.8		8.4	30.0	
750520	1400	2		27.0	37	5.8		8.6	31.0	
750623	1016	1			37					
750623	1500	1			37					
750708	1655	1		28.8	2000	6.8			34.0	
750708	1656	2		28.8	2000	6.9		7.9	34.0	
750708	1657	3		28.8	2000				34.0	
750708	1945	1		28.6	2000	6.6			34.1	
750708	1946	2		28.7	2000	6.6			34.2	
750708	1947	3		28.4	2000	6.6			34.0	
750708	1948	4		28.5	2000	6.6			34.0	
750708	1949	5		28.5	2000				34.0	
750708	2225	1		27.7	2000	6.0			34.4	
750708	2226	2		27.9	2000	6.0			34.3	
750708	2227	3		27.7	2000	6.0		8.0	34.2	
750708	2228	4		27.8	2000	6.0			34.5	
750708	2229	5		27.8	2000				34.2	

STATION - FF-SURF-003 INTRACOASTAL WW NW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750709	0148	1		27.5	2000	5.8			34.7	
750709	0149	2		27.4	2000	5.8			34.8	
750709	0150	3		27.4	2000	5.9			34.7	
750709	0151	4		27.3	2000	5.9			35.2	
750709	0152	5		27.4	2000	6.0			34.8	
750709	0153	6		27.4	2000	6.0			35.2	
750709	0154	7		27.3	2000	6.2			35.3	
750709	0155	8		27.3	2000				35.4	
750709	0440	1		26.8	2000	5.4			34.6	
750709	0441	2		26.7	2000	5.4		7.7	34.9	
750709	0442	3		26.6	2000				34.5	
750709	0808	1		26.6	2000	5.4			34.4	
750709	0809	2		26.6	2000	5.4			34.5	
750709	0810	3		26.7	2000	5.4			34.5	
750709	0811	4		26.6	2000	5.4			34.5	
750709	0812	5		26.6	2000	5.4			34.3	
750709	0813	6		26.7	2000	5.3			34.4	
750709	0814	7		26.7	2000				34.5	
750709	1110	1		27.5	2000	5.5			34.7	
750709	1111	2		27.5	2000	5.5			34.8	
750709	1112	3		27.4	2000	5.5			34.8	
750709	1113	4		27.5	2000				34.7	
750709	1405	1		28.8	2000	6.8			35.0	
750709	1406	2		28.6	2000	6.8			35.0	
750709	1407	3		28.7	2000	6.8			35.0	
750709	1408	4		28.5	2000	6.7			35.0	
750709	1409	5		28.3	2000	6.6			34.9	
750709	1410	6		28.2	2000				34.8	
750710					2000		30300			34.80
750219										
	NUMBER	73		71	74	63	1	17	71	1
	MAXIMUM	8		28.8	2000	8.8		8.6	35.4	
	MINIMUM	1		13.0	37	4.0		7.7	19.5	
	MEAN	3		22.7	1682	6.7		8.0	30.3	
	LOG MEAN	2		21.8	1047	6.6		8.0	29.8	
750710										

SURF CITY

STATION - FF-SURF-003 INTRACOASTAL WW NW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219	0813	4	0.03	0.16		0.02	0.05		4.7	
750219	1522	3	0.05K	0.30		0.05	0.05K		5.7	
750220	1052	3							9.3	
750220	1742	3	0.04	0.33		0.02	0.04		5.5	
750324	0845	1	0.05K	0.40		0.05K	0.06		30.0K	
750324	0845	2	0.05K	0.40		0.05K	0.06		30.0K	
750324	1445	1	0.05K	0.30		0.05K	0.06		30.0K	
750324	1445	2	0.05K	0.30		0.05K	0.06		30.0K	
750422	0745	1	0.07	0.60		0.05K	0.06		10.0K	
750422	0745	2	0.07	0.60		0.05K	0.06		10.0K	
750422	1340	1	0.05K	0.50		0.05K	0.07		10.0K	
750422	1340	2	0.05K	0.50		0.05K	0.07		10.0K	
750708	1656	2	0.08	0.15		0.01K	0.09		4.5	
750708	2227	3	0.09	0.18		0.01K	0.11		5.0	
750709	0441	2	0.13	0.18		0.01K	0.10		6.2	
750709	1111	2	0.09	0.20		0.01K	0.09		4.5	
750710					1225			800.0		1.00K
750219										
NUMBER		73	15	15	1	15	15	1	16	1
MAXIMUM		8	0.13	0.60		0.05	0.11		9.3	
MINIMUM		1	0.03K	0.15		0.01K	0.04K		4.5K	
MEAN		3	0.06	0.34		0.04	0.07		12.8	
LOG MEAN		2	0.06	0.31		0.03	0.07		9.8	
750710										

DATE	TIME	00003 DEPTH FEET	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT
750219	0810	1						460	460	
750219	1520	1						240	240	
750220	1050	1						1100L	150	
750220	1740	1						240	240	
750324	0845	1						240	240	
750324	1445	1						150	43	
750422	0745	1						23	4	
750422	1340	1						7	4	
750623	1016	1						3K	3K	
750623	1500	1						4	3K	
750708	1655	1						330	70	
750708	2225	1						130	11	
750709	0440	1						490	79	
750709	1110	1						31	4	

STATION - FF-SURF-003 INTRACOASTAL WW NW OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE TIME	00003 DEPTH FEET	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT
750710		22.00	4.20	21.00	4.20	30.00			3.8
750219									
NUMBER	73	1	1	1	1	1	14	14	1
MAXIMUM	8						1100L	460	
MINIMUM	1						3K	3K	
MEAN	3						246	111	
LOG MEAN	2						86	32	
750710									

STATION - FF-SURF-004 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0830	1	50	14.5	2000	7.8			24.1		
750219	0831	2	50	14.4	2000	7.8			24.1		
750219	0832	3	50	14.2	2000	7.7		7.9	23.7		0.03
750219	0833	4	50	14.2	2000	7.7			23.8		
750219	0834	5	50	14.3	2000	7.7			23.8		
750219	1525	1	50	15.5	2000	7.4			23.5		
750219	1526	2	50	15.0	2000	7.3			23.7		
750219	1527	3	50	15.0	2000	7.2		7.9	24.0		0.05K
750219	1528	4	50	15.0	2000	7.2			24.0		
750220	1115	1	50	12.5	2000	10.2			19.0		
750220	1116	2	50	13.0	2000	10.0		8.1	18.7		
750220	1117	3	50	13.7	2000	9.1			20.0		
750220	1118	4	50	14.5	2000	8.5			22.0		
750220	1705	1	50	13.5	2000	8.2			22.0		
750220	1706	2	50	13.5	2000	8.2		7.6	22.0		0.04
750220	1707	3	50	13.5	2000	8.2			22.5		
750220	1708	4	50	14.0	2000	8.0			22.5		
750324	0855	1		17.0	37	6.6		8.1	30.0		0.05K
750324	0855	3		17.0	37	6.6		8.1	30.0		0.05K
750324	1455	1		21.0	37	7.5		8.2	27.5		0.05K
750324	1455	3		21.0	37	7.5		8.2	27.5		0.05K
750422	0845	1		18.0	37	6.4		8.1	31.0		0.10
750422	0845	3		18.0	37	6.4		8.1	31.0		0.10
750422	1400	1		22.0	37	8.0		8.4	29.0		0.05K
750422	1400	3		22.0	37	8.0		8.4	29.0		0.05K
750520	0845	3		24.0	37	4.8		8.4	31.0		
750520	1400	3		25.0	37	5.0		8.6	32.0		
750623	1027	1			37						
750623	1510	1			37						
750708	1715	1		29.2	2000	6.8			33.5		
750708	1716	2		29.2	2000	6.7			33.4		
750708	1717	3		29.1	2000	6.8		7.9	33.5		0.08
750708	1718	4		28.5	2000	6.6			33.7		
750708	1719	5		28.4	2000				34.1		
750708	2011	1		27.8	2000	6.6			33.9		
750708	2012	2		28.0	2000	6.6			34.0		
750708	2013	3		27.8	2000	6.6			34.1		
750708	2014	4		27.7	2000	6.6			34.1		
750708	2015	5		27.9	2000				33.9		
750708	2255	1		27.5	2000	6.1			34.7		
750708	2256	2		27.7	2000	6.1			34.7		
750708	2257	3		27.6	2000	6.1		8.0	34.7		0.06
750708	2258	4		27.6	2000	6.1			34.8		
750708	2259	5		27.7	2000				34.6		
750709	0223	1		27.0	2000	5.4			34.6		

STATION - FF-SURF-004 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	0224	2		27.0	2000	5.4			34.4		
750709	0225	3		27.1	2000	5.6			34.6		
750709	0226	4		27.1	2000				34.7		
750709	0510	1		26.3	2000	4.6			34.1		
750709	0511	2		26.4	2000	4.5		7.8	34.0		0.09
750709	0512	3		26.3	2000				34.2		
750709	0825	1		26.8	2000	5.9			34.7		
750709	0826	2		26.8	2000	5.8			34.7		
750709	0827	3		26.8	2000	5.9			34.7		
750709	0828	4		26.8	2000				34.6		
750709	1132	1		27.6	2000	5.7			34.8		
750709	1133	2		27.7	2000	5.7			34.9		0.06
750709	1134	3		27.5	2000	5.7			35.1		
750709	1135	4		27.4	2000				35.2		
750709	1430	1		30.0	2000	7.0			34.9		
750709	1431	2		30.0	2000	7.0			34.7		
750709	1432	3		29.4	2000	6.9			35.0		
750709	1433	4		29.0	2000				35.2		
750710					2000		2700			49.80	
750219											
NUMBER		63		61	64	53	1	17	61	1	15
MAXIMUM		5		30.0	2000	10.2		8.6	35.2		0.10
MINIMUM		1		12.5	37	4.5		7.6	18.7		0.03K
MEAN		3		22.8	1632	6.9		8.1	30.4		0.06
LOG MEAN		2		21.8	946	6.8		8.1	29.9		0.06
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	0832	3	0.14		0.02	0.04		4.7		
750219	1527	3	0.30		0.05K	0.05K		4.0		
750220	1116	2						5.1		
750220	1706	2	0.33		0.02	0.04		6.5		
750324	0855	1	0.40		0.05K	0.06		30.0K		
750324	0855	3	0.40		0.05K	0.06		30.0K		
750324	1455	1	0.20		0.05K	0.06		30.0K		
750324	1455	3	0.20		0.05K	0.06		30.0K		
750422	0845	1	0.30		0.05K	0.10		10.0K		
750422	0845	3	0.30		0.05K	0.10		10.0K		
750422	1400	1	0.30		0.05K	0.06		10.0K		
750422	1400	3	0.30		0.05K	0.06		10.0K		

STATION - FF-SURF-004 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00669 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750708	1717	3	0.27		0.01K	0.12		5.8		
750708	2257	3	0.15		0.01K	0.10		4.1		
750709	0511	2	0.18		0.01K	0.10		5.8		
750709	1133	2	0.27		0.01K	0.09		4.5		
750710				625			730.0		1.00K	6.20
750219										
NUMBER		63	15	1	15	15	1	16	1	1
MAXIMUM		5	0.40		0.02	0.12		6.5		
MINIMUM		1	0.14		0.01K	0.04K		4.0K		
MEAN		3	0.27		0.04	0.07		12.5		
LOG MEAN		2	0.26		0.03	0.07		9.3		
750710										

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750219	0830	1					460	460		
750219	1525	1					240	240		
750219	1527	3								0.1K
750220	1115	1					460	460		
750220	1116	2								0.1K
750220	1705	1					1100L	1100		
750220	1706	2								0.1K
750324	0855	1					210	210		0.1K
750324	0855	3								0.1K
750324	1455	1					150	75		0.1K
750324	1455	3								0.1K
750422	0845	1					23	4		0.2
750422	0845	3								0.2
750422	1400	1					3K	3K		0.1K
750422	1400	3								0.1K
750623	1027	1					3K	3K		
750623	1510	1					4	4		
750708	1715	1					49	2		
750708	2255	1					27	2K		
750709	0510	1					49	13		
750709	1132	1					26	13		
750710			1.00K	5.00K	2.00K	4.00			0.8	

STATION - FF-SURF-004 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750219										
NUMBER		63	1	1	1	1	14	14	1	11
MAXIMUM		5					1100L	1100		0.2
MINIMUM		1					3K	2K		0.1K
MEAN		3					200	185		0.1
LOG MEAN		2					55	26		0.1
750710										

STATION - FF-SURF-005 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0835	1	50	14.3	2000	7.4			23.9		
750219	0836	2	50	14.3	2000	7.4		7.8	23.8		0.03
750219	0837	3	50	14.3	2000	7.5			23.8		
750219	0838	4	50	14.3	2000	7.9			23.8		
750219	0839	5	50	14.2	2000	7.7			23.8		
750219	1535	1	50	15.0	2000	7.3			23.0		
750219	1536	2	50	15.0	2000	7.3			23.5		
750219	1537	3	50	15.0	2000	7.3		7.8	23.5		0.05K
750219	1538	4	50	15.0	2000	7.2			24.0		
750219	1539	5	50	14.5	2000	7.0			25.0		
750220	1130	1	50	13.0	2000	9.8			17.0		
750220	1131	2	50	13.0	2000	9.7		8.0	17.0		
750220	1132	3	50	13.0	2000	9.7			17.0		
750220	1133	4	50	13.0	2000	9.4			21.0		
750220	1715	1	50	13.5	2000	8.3			19.5		
750220	1716	2	50	14.0	2000	8.0		7.6	20.0		0.05
750220	1717	3	50	14.0	2000	7.8			21.0		
750220	1718	4	50	14.1	2000	7.8			21.5		
750324	0900	1		17.5	37	6.5		8.2	29.5		0.05K
750324	0900	2		17.5	37	6.5		8.2	29.5		0.05K
750324	1500	1		20.0	37	6.5		8.1	27.0		0.05K
750324	1500	2		20.0	37	6.5		8.1	27.0		0.05K
750422	0800	1		18.5	37	6.4		8.1	30.0		0.05K
750422	0800	2		18.5	37	6.4		8.1	30.0		0.05K
750422	1354	1		22.0	37	8.1		8.1	29.0		0.05K
750422	1354	2		22.0	37	8.1		8.1	29.0		0.05K
750520	0845	2		24.0	37	4.4		8.3	31.0		
750520	1400	2		27.0	37	5.2		8.5	32.5		
750623	1032	1			37						
750623	1515	1			37						
750708	1725	1		29.0	2000	6.9			33.5		
750708	1726	2		29.0	2000	6.9		7.8	33.5		0.09
750708	1727	3		28.6	2000	7.0			33.5		
750708	1728	4		28.4	2000				33.7		
750708	2020	1		27.8	2000	6.7			33.9		
750708	2021	2		27.8	2000	6.7			33.9		
750708	2022	3		27.9	2000	6.7			34.1		
750708	2023	4		27.8	2000	6.7			34.1		
750708	2024	5		27.8	2000				33.6		
750708	2305	1		27.7	2000	6.4			34.9		
750708	2306	2		27.7	2000	6.2			35.0		
750708	2307	3		27.6	2000	6.2		8.0	34.9		0.09
750708	2308	4		27.7	2000	6.2			34.8		
750708	2309	5		27.6	2000	6.2			34.9		
750708	2310	6		27.7	2000				34.8		

STATION - FF-SURF-005 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	0230	1		27.4	2000	6.3			35.1		
750709	0231	2		27.4	2000	6.2			35.0		
750709	0232	3		27.5	2000	6.2			35.1		
750709	0233	4		27.4	2000	6.2			35.1		
750709	0234	5		27.3	2000				35.0		
750709	0518	1		26.9	2000	5.5			34.4		
750709	0519	2		26.7	2000	5.2			34.5		
750709	0520	3		26.7	2000	5.3		7.9	34.4		0.09
750709	0521	4		26.8	2000	5.2			34.6		
750709	0522	5		26.9	2000				34.0		
750709	0835	1		26.8	2000	5.7			34.6		
750709	0836	2		26.8	2000	5.9			34.5		
750709	0837	3		26.9	2000	5.9			34.6		
750709	0838	4		26.8	2000				34.6		
750709	1138	1		27.6	2000	5.8			34.8		
750709	1139	2		27.6	2000	5.8			35.0		
750709	1140	3		27.4	2000	5.7			35.1		0.06
750709	1141	4		27.6	2000	5.7			35.1		
750709	1142	5		27.4	2000				35.1		
750709	1435	1		28.8	2000	7.0			35.0		
750709	1436	2		28.7	2000	7.0			35.1		
750709	1437	3		28.7	2000				35.2		
750710					2000		77800			58.20	
750219											
	NUMBER	67		65	68	57	1	17	65	1	15
	MAXIMUM	6		29.0	2000	9.8		8.5	35.2		0.09
	MINIMUM	1		13.0	37	4.4		7.6	17.0		0.03K
	MEAN	3		22.8	1654	6.8		8.0	30.2		0.06
	LOG MEAN	2		21.9	989	6.7		8.0	29.6		0.06
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	0836	2	0.15		0.02	0.05		5.5		
750219	1537	3	0.30		0.05K	0.05K		4.0		
750220	1131	2						7.5		
750220	1716	2	0.14		0.02	0.04		6.0		
750324	0900	1	0.40		0.05K	0.06		30.0K		
750324	0900	2	0.40		0.05K	0.06		30.0K		
750324	1500	1	0.30		0.05K	0.06		30.0K		
750324	1500	2	0.30		0.05K	0.06		30.0K		

STATION - FF-SURF-005 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750422	0800	1	0.30		0.05K	0.05K		10.0K		
750422	0800	2	0.30		0.05K	0.05K		10.0K		
750422	1354	1	0.30		0.05K	0.06		10.0K		
750422	1354	2	0.30		0.05K	0.06		10.0K		
750708	1726	2	0.27		0.01K	0.13		5.3		
750708	2307	3	0.18		0.01K	0.08		5.0		
750709	0520	3	0.20		0.01K	0.08		4.3		
750709	1140	3	0.25		0.01K	0.07		4.5		
750710				2300			900.0		1.00K	47.00
750219										
NUMBER		67	15	1	15	15	1	16	1	1
MAXIMUM		6	0.40		0.02	0.13		7.5		
MINIMUM		1	0.14		0.01K	0.04K		4.0K		
MEAN		3	0.27		0.04	0.06		12.6		
LOG MEAN		2	0.26		0.03	0.06		9.5		
750710										

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750219	0835	1					460	460		
750219	1535	1					460	150		
750219	1537	3								0.1K
750220	1130	1					1100	240		
750220	1131	2								0.1K
750220	1715	1					1100L	240		
750220	1716	2								0.1K
750324	0900	1					43	4		0.1K
750324	0900	2								0.1K
750324	1500	1					43	43		0.1
750324	1500	2								0.1
750422	0800	1					15	7		0.1
750422	0800	2								0.1
750422	1354	1					3K	3K		0.1
750422	1354	2								0.1
750623	1032	1					4	4		
750623	1515	1					7	7		
750708	1725	1					221	13		
750708	2305	1					17	2K		
750709	0518	1					490	17		
750709	1138	1					70	2		
750710			6.90	26.00	11.60	44.00			8.8	

STATION - FF-SURF-005 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750219										
NUMBER		67	1	1	1	1	14	14	1	11
MAXIMUM		6					1100L	460		0.1
MINIMUM		1					3K	2K		0.1K
MEAN		3					288	85		0.1
LOG MEAN		2					70	18		0.1
750710										

STATION - FF-SURF-006 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750219	0845	1	50	14.3	2000	7.5			23.8	
750219	0846	2	50	14.2	2000	7.5		7.8	23.8	
750219	0847	3	50	14.3	2000	7.5			23.7	
750219	1542	1	50	15.0	2000	7.2			22.0	
750219	1543	2	50	15.0	2000	7.2			22.5	
750219	1544	3	50	15.0	2000	7.1		7.7	22.5	
750219	1545	4	50	14.8	2000	6.9			23.5	
750220	1135	1	50	13.0	2000	9.3			20.0	
750220	1136	2	50	13.5	2000	9.2		7.9	20.5	
750220	1137	3	50	14.0	2000	8.4			22.0	
750220	1719	1	50	13.0	2000	9.2			18.0	
750220	1720	2	50	13.5	2000	8.2		7.5	19.5	
750220	1721	3	50	13.5	2000	8.2			20.5	
750220	1722	4	50	14.0	2000	7.7			20.0	
750324	0905	1		17.5	37	6.4		8.1	29.0	
750324	0905	2		17.5	37	6.4		8.1	29.0	
750324	1505	1		22.0	37	7.7		8.2	27.0	
750324	1505	2		22.0	37	7.7		8.2	27.0	
750422	0805	1		18.0	37	5.6		8.0	29.0	
750422	0805	2		18.0	37	5.6		8.0	29.0	
750422	1400	1		21.0	37	7.8		7.6	28.0	
750422	1400	2		21.0	37	7.8		7.6	28.0	
750520	0845	2		24.0	37	4.0		8.3	30.0	
750520	1400	2		27.0	37	5.0		8.5	32.0	
750623	1036	1			37					
750623	1518	1			37					
750708	1735	1		29.4	2000	6.5			33.0	
750708	1736	2		29.5	2000	6.4		7.8	33.0	
750708	1737	3		29.4	2000				33.1	
750708	2025	1		28.1	2000	6.5			33.7	
750708	2026	2		28.1	2000	6.5			33.7	
750708	2027	3		28.0	2000	6.5			33.8	
750708	2028	4		27.9	2000				33.7	
750708	2315	1		27.6	2000	6.0			34.2	
750708	2316	2		27.7	2000	6.0			34.4	
750708	2317	3		27.7	2000	6.1		7.9	34.3	
750708	2318	4		27.7	2000	6.2			34.6	
750708	2319	5		27.8	2000				34.6	
750709	0240	1		27.2	2000	5.6			34.2	
750709	0241	2		27.2	2000	5.5			34.3	
750709	0242	3		27.4	2000				34.8	
750709	0528	1		26.4	2000	4.4			34.0	
750709	0529	2		26.4	2000	4.3		8.1	34.1	
750709	0530	3		26.2	2000				34.1	
750709	0840	1		26.3	2000	4.0			33.9	

STATION - FF-SURF-006 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE
750709	0841	2		26.3	2000	4.0			34.0	
750709	0842	3		26.3	2000				34.0	
750709	1145	1		27.5	2000	5.6			34.8	
750709	1146	2		27.6	2000	5.5			35.0	
750709	1147	3		27.5	2000	5.5			34.7	
750709	1148	4		27.6	2000				35.0	
750709	1440	1		30.0	2000	7.0			34.7	
750709	1441	2		30.0	2000	7.0			34.7	
750709	1442	3		30.0	2000	6.9			34.7	
750709	1443	4		29.5	2000				34.5	
750710					2000		56700			49.10
750219										
NUMBER		55		53	56	45	1	17	53	1
MAXIMUM		5		30.0	2000	9.3		8.5	35.0	
MINIMUM		1		13.0	37	4.0		7.5	18.0	
MEAN		2		22.9	1579	6.6		8.0	29.8	
LOG MEAN		2		22.0	851	6.5		8.0	29.3	
750710										

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219	0846	2	0.04	0.19		0.02	0.09		5.7	
750219	1544	3	0.05K	0.30		0.05K	0.05		5.1	
750220	1136	2							6.5	
750220	1720	2	0.05	0.22		0.02	0.07		6.0	
750324	0905	1	0.05K	0.50		0.17	0.07		30.0K	
750324	0905	2	0.05K	0.50		0.17	0.07		30.0K	
750324	1505	1	0.05K	0.30		0.05K	0.07		30.0K	
750324	1505	2	0.05K	0.30		0.05K	0.07		30.0K	
750422	0805	1	0.08	0.30		0.05K	0.05K		10.0K	
750422	0805	2	0.08	0.30		0.05K	0.05K		10.0K	
750422	1400	1	0.05K	0.30		0.05K	0.06		10.0K	
750422	1400	2	0.05K	0.30		0.05K	0.06		10.0K	
750708	1736	2	0.06	0.20		0.01K	0.19		7.5	
750708	2317	3	0.06	0.20		0.01K	0.07		5.3	
750709	0529	2	0.06	0.25		0.01K	0.12		11.0	
750709	1146	2	0.05	0.20		0.01K	0.08		6.0	
750710					2150			1475.0		1.00K

STATION - FF-SURF-006 INTRACOASTAL WW AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD
750219										
NUMBER		55	15	15	1	15	15	1	16	1
MAXIMUM		5	0.08	0.50		0.17	0.19		11.0	
MINIMUM		1	0.04K	0.19		0.01K	0.05K		5.1K	
MEAN		2	0.06	0.29		0.05	0.08		13.3	
LOG MEAN		2	0.05	0.28		0.03	0.07		10.6	
750710										

DATE	TIME	00003 DEPTH FEET	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT
750219	0845	1						460	93	
750219	1542	1						460	460	
750220	1135	1						1100	240	
750220	1719	1						1100L	240	
750324	0905	1						93	93	
750324	1505	1						240	240	
750422	0805	1						4	4	
750422	1400	1						3K	3K	
750623	1036	1						43	15	
750623	1518	1						3	3	
750708	1735	1						212	2	
750708	2315	1						172	2	
750709	0528	1						172	49	
750709	1145	1						23	8	
750710			20.00	5.70	17.00	6.90	3.50			5.5
750219										
NUMBER		55	1	1	1	1	1	14	14	1
MAXIMUM		5						1100L	460	
MINIMUM		1						3K	2K	
MEAN		2						292	104	
LOG MEAN		2						86	25	
750710										

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 MSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0855	1	50	14.7	2000	7.9			23.7		
750219	0856	2	50	14.7	2000	8.0			23.6		
750219	0857	3	50	14.7	2000	7.9			23.6		
750219	0858	4	50	14.5	2000	7.9			23.6		
750219	0859	5	50	14.5	2000	7.9			23.7		
750219	0900	6	50	14.5	2000	8.0			23.5		
750219	0901	7	50	14.5	2000	8.0		7.8	23.8		0.04
750219	0902	8	50	14.5	2000	8.0			23.7		
750219	0903	9	50	14.5	2000	8.0			23.8		
750219	0904	10	50	14.5	2000	8.0			23.5		
750219	0905	11	50	14.5	2000	8.0			23.6		
750219	0906	12	50	14.5	2000	8.1			23.6		
750219	0907	13	50	14.3	2000	8.1			23.7		
750219	1550	1	50	15.0	2000	7.2			23.2		
750219	1551	2	50	15.0	2000	7.2			23.5		
750219	1552	3	50	15.0	2000	7.2			23.5		
750219	1553	4	50	15.0	2000	7.2			23.5		
750219	1554	5	50	15.0	2000	7.2			23.5		
750219	1555	6	50	15.0	2000	7.2			23.5		
750219	1556	7	50	15.0	2000	7.2			23.5		
750219	1557	8	50	15.0	2000	7.2		7.9	23.5		0.05K
750219	1558	9	50	15.0	2000	7.2			23.5		
750219	1559	10	50	15.0	2000	7.2			23.5		
750219	1600	11	50	15.0	2000	7.2			23.5		
750219	1601	12	50	15.0	2000	7.2			23.5		
750219	1602	13	50	15.0	2000	7.2			23.5		
750219	1603	14	50	15.0	2000	7.2			23.5		
750220	1148	1	50	14.0	2000	9.4			18.0		
750220	1149	2	50	14.0	2000	9.4			18.0		
750220	1150	3	50	14.0	2000	9.4			18.5		
750220	1151	4	50	14.0	2000	9.4			18.5		
750220	1152	5	50	14.0	2000	9.4			18.5		
750220	1153	6	50	14.0	2000	9.4			18.5		
750220	1154	7	50	14.0	2000	9.4		8.0	19.0		
750220	1155	8	50	14.0	2000	9.4			19.0		
750220	1156	9	50	14.0	2000	9.3			19.0		
750220	1157	10	50	14.0	2000	9.3			19.0		
750220	1158	11	50	14.0	2000	9.3			19.0		
750220	1159	12	50	14.0	2000	9.3			19.0		
750220	1200	13	50	14.0	2000	9.3			19.5		
750220	1201	14	50	14.0	2000	9.2			19.5		
750220	1202	15	50	14.0	2000	9.2			19.5		
750220	1647	1	50	14.0	2000	8.0			20.0		
750220	1648	2	50	14.5	2000	8.0			21.0		
750220	1649	3	50	14.5	2000	8.0			21.0		

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750220	1650	4	50	14.5	2000	8.0			21.0		
750220	1651	5	50	14.5	2000	8.0			21.0		
750220	1652	6	50	14.5	2000	8.0			21.0		
750220	1653	7	50	14.5	2000	8.0		7.6	21.0		0.05
750220	1654	8	50	14.5	2000	8.0			21.0		
750220	1655	9	50	14.5	2000	8.0			21.0		
750220	1656	10	50	14.5	2000	8.0			21.0		
750220	1657	11	50	15.0	2000	8.0			21.0		
750220	1658	12	50	14.5	2000	8.0			21.0		
750220	1659	13	50	14.5	2000	8.0			21.0		
750220	1700	14	50	14.5	2000	8.0			21.0		
750220	1701	15	50	14.5	2000	8.0			21.0		
750324	0915	1		17.0	37	6.6		8.1	30.0		0.05K
750324	0915	7		17.0	37	6.6		8.1	30.0		0.05K
750324	1515	1		19.0	37	6.5		8.3	26.0		0.05K
750324	1515	7		19.0	37	6.5		8.3	26.0		0.05K
750422	0845	1		18.5	37	6.2		8.1	30.0		0.05K
750422	0845	7		18.5	37	6.2		8.1	30.0		0.05K
750422	1400	1		20.0	37	7.1		7.8	28.0		0.05K
750422	1400	7		20.0	37	7.1		7.8	28.0		0.05K
750520	0845	7		24.0	37	4.6		8.3	31.0		
750520	1400	7		25.0	37	5.2		8.5	31.0		
750623	1042	1			37						
750623	1523	1			37						
750708	1705	1		28.3	2000	6.6			33.4		
750708	1706	2		28.3	2000	6.6			33.2		
750708	1707	3		28.2	2000	6.6			33.3		
750708	1708	4		28.1	2000	6.6			33.1		
750708	1709	5		28.1	2000	6.6		7.9	33.3		0.04
750708	1710	6		28.2	2000	6.6			33.3		
750708	1711	7		28.2	2000	6.6			33.3		
750708	1712	8		28.2	2000	6.6			33.4		
750708	1713	9		28.1	2000				33.1		
750708	1955	1		28.1	2000	6.7			33.8		
750708	1956	2		27.9	2000	6.7			33.8		
750708	1957	3		28.0	2000	6.7			33.9		
750708	1958	4		28.0	2000	6.7			33.9		
750708	1959	5		28.0	2000	6.7			33.9		
750708	2000	6		28.0	2000	6.7			33.8		
750708	2001	7		28.1	2000	6.7			33.9		
750708	2002	8		28.0	2000	6.7			33.9		
750708	2003	9		28.0	2000	6.7			33.9		
750708	2004	10		28.0	2000	6.7			33.9		
750708	2005	11		28.0	2000	6.7			33.9		
750708	2006	12		28.0	2000	6.7			33.8		

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL ARL FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750708	2007	13		28.0	2000	6.7			33.9		
750708	2008	14		27.9	2000	6.7			33.8		
750708	2009	15		28.0	2000	6.6			33.8		
750708	2010	16		28.0	2000				33.8		
750708	2235	1		27.6	2000	6.4			35.0		
750708	2236	2		28.0	2000	6.4			35.0		
750708	2237	3		27.7	2000	6.3			34.8		
750708	2238	4		27.8	2000	6.4		8.0	34.9		0.05
750708	2239	5		27.8	2000	6.4			34.9		
750708	2240	6		27.8	2000	6.4			35.1		
750708	2241	7		27.7	2000	6.4			35.0		
750708	2242	8		27.5	2000				35.2		
750709	0205	1		27.3	2000	6.2			35.2		
750709	0206	2		27.4	2000	6.2			35.3		
750709	0207	3		27.3	2000	6.2			35.3		
750709	0208	4		27.3	2000	6.1			35.3		
750709	0209	5		27.3	2000	6.2			35.4		
750709	0210	6		27.3	2000	6.2			35.4		
750709	0211	7		27.5	2000	6.2			35.5		
750709	0212	8		27.4	2000	6.2			35.4		
750709	0213	9		27.4	2000	6.2			35.5		
750709	0214	10		27.5	2000	6.2			35.5		
750709	0215	11		27.5	2000	6.2			35.5		
750709	0216	12		27.6	2000	6.2			35.5		
750709	0217	13		27.4	2000	6.2			35.5		
750709	0218	14		27.3	2000				35.4		
750709	0452	1		26.9	2000	5.8			34.7		
750709	0453	2		27.0	2000	5.8			34.7		
750709	0454	3		27.0	2000	5.9			34.5		
750709	0455	4		27.0	2000	6.0			34.8		
750709	0456	5		27.1	2000	6.0			35.0		
750709	0457	6		27.0	2000	6.0			34.9		
750709	0458	7		27.1	2000	6.1		8.0	34.9		0.05
750709	0459	8		27.4	2000	6.1			35.1		
750709	0500	9		27.1	2000	6.0			35.2		
750709	0501	10		27.2	2000	6.0			35.0		
750709	0502	11		27.3	2000	6.0			35.1		
750709	0503	12		27.3	2000	6.0			35.0		
750709	0504	13		27.2	2000				35.1		
750709	0815	1		26.8	2000	5.8			34.1		
750709	0816	2		26.9	2000	5.7			34.1		
750709	0817	3		27.0	2000	5.7			34.2		
750709	0818	4		26.8	2000	5.7			34.1		
750709	0819	5		26.9	2000	5.7			34.0		
750709	0820	6		26.8	2000	5.7			34.2		

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 %SAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	0821	7		26.8	2000	5.7			34.2		
750709	0822	8		26.7	2000	5.8			34.2		
750709	0823	9		26.8	2000	5.8			34.3		
750709	0824	10		26.7	2000				34.2		
750709	1115	1		27.3	2000	5.2			34.8		
750709	1116	2		27.3	2000	5.3			35.1		
750709	1117	3		27.3	2000	5.2			35.1		
750709	1118	4		27.3	2000	5.2			35.0		
750709	1119	5		27.1	2000	5.2			35.0		
750709	1120	6		27.5	2000	5.2			35.1		
750709	1121	7		27.2	2000	5.2			35.1		
750709	1122	8		27.2	2000	5.2			35.0		0.05
750709	1123	9		27.2	2000	5.2			35.1		
750709	1124	10		27.2	2000	5.2			35.2		
750709	1125	11		27.3	2000	5.2			35.0		
750709	1126	12		27.2	2000	5.2			35.0		
750709	1127	13		27.3	2000	5.2			35.1		
750709	1128	14		27.3	2000	5.2			35.2		
750709	1129	15		27.2	2000	5.2			35.1		
750709	1130	16		27.1	2000				35.1		
750709	1413	1		28.0	2000	6.3			35.1		
750709	1414	2		27.9	2000	6.3			34.8		
750709	1415	3		28.0	2000	6.2			35.0		
750709	1416	4		27.9	2000	6.2			35.2		
750709	1417	5		27.9	2000	6.2			34.9		
750709	1418	6		27.9	2000	6.2			34.7		
750709	1419	7		27.9	2000	6.2			35.0		
750709	1420	8		27.8	2000	6.2			35.0		
750709	1421	9		27.8	2000	6.3			35.0		
750709	1422	10		27.9	2000	6.2			34.9		
750709	1423	11		27.9	2000	6.2			35.0		
750709	1424	12		27.8	2000	6.2			34.2		
750709	1425	13		27.9	2000	6.1			35.0		
750709	1426	14		27.8	2000				35.1		
750710					2000		5400			27.7	
750219											
NUMBER		169		167	170	159	1	17	167	1	15
MAXIMUM		16		28.3	2000	9.4		8.5	35.5		0.05
MINIMUM		1		14.0	37	4.6		7.6	18.0		0.04K
MEAN		7		22.6	1861	6.8		8.0	29.8		0.05
LOG MEAN		5		21.7	1509	6.7		8.0	29.1		0.05
750710											

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	0901	7	0.14		0.02	0.05		4.0		
750219	1557	8	0.30		0.05K	0.05K		4.3		
750220	1154	7						7.5		
750220	1653	7	0.19		0.02	0.04		7.1		
750324	0915	1	0.40		0.05K	0.06		30.0K		
750324	0915	7	0.40		0.05K	0.06		30.0K		
750324	1515	1	0.40		0.05K	0.06		30.0K		
750324	1515	7	0.40		0.05K	0.06		30.0K		
750422	0845	1	0.20		0.05K	0.05K		10.0K		
750422	0845	7	0.20		0.05K	0.05K		10.0K		
750422	1400	1	0.30		0.05K	0.07		10.0K		
750422	1400	7	0.30		0.05K	0.07		10.0K		
750708	1709	5	0.25		0.01K	0.11		6.0		
750708	2238	4	0.15		0.01K	0.09		5.3		
750709	0458	7	0.15		0.01K	0.07		4.1		
750709	1122	8	0.15		0.01K	0.07		3.1		
750710				600			1850.0		1.00K	8.00
750219										
NUMBER		169	15	1	15	15	1	16	1	1
MAXIMUM		16	0.40		0.02	0.11		7.5		
MINIMUM		1	0.14		0.01K	0.04K		3.1K		
MEAN		7	0.26		0.04	0.06		12.6		
LOG MEAN		5	0.24		0.03	0.06		9.3		
750710										

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750219	0855	1					240	93		
750219	1550	1					240	240		0.1K
750219	1557	8					1100	460		0.1K
750220	1148	1					1100L	1100		0.1K
750220	1154	7					93	21		0.1K
750220	1647	1					23	23		0.1K
750220	1653	7					4	3K		0.4
750324	0915	1					3K	3K		0.1K
750324	0915	7								
750324	1515	1								
750324	1515	7								
750422	0845	1								
750422	0845	7								
750422	1400	1								

STATION - FF-SURF-009 INTRACOASTAL WW NE OF SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L
750422	1400	7								0.1K
750623	1042	1					4	4		
750623	1523	1					3K	3K		
750708	1705	1					11	2		
750708	2235	1					14	2		
750709	0452	1					2K	2K		
750709	1115	1					4	2		
750710			1.30	5.40	3.80	6.90			1.3	
750219										
NUMBER		169	1	1	1	1	14	14	1	11
MAXIMUM		16					1100L	1100		0.4
MINIMUM		1					2K	2K		0.1K
MEAN		7					203	140		0.2
LOG MEAN		5					24	14		0.1
750710										

STATION - FF-SURF-010 BARLOW CK AT MOUTH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00400 PH SU	00480 SALINITY PPTH	00610 NH3-N TOTAL MG/L
750219	0915	1	50	14.7	2000	6.6	7.0	24.1	0.06
750219	1610	1	50	15.7	2000	8.8		18.4	0.05K
750219	1611	2	50	15.7	2000	8.8		18.4	
750220	1245	1	50	12.8	2000	8.6	7.7	16.2	
750220	1615	1	50	12.6	2000	8.8	7.1	16.6	0.04
750219									
	NUMBER	5		5	5	5	3	5	3
	MAXIMUM	2		15.7	2000	8.8	7.7	24.1	0.06
	MINIMUM	1		12.6	2000	6.6	7.0	16.2	0.04K
	MEAN	1		14.3	2000	8.3	7.3	18.7	0.05
	LOG MEAN	1		14.2	2000	8.3	7.3	18.5	0.05
750220									

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750219	0915	1	0.45	0.04	0.28	17.1	1100L	1100L
750219	1610	1	0.30	0.05K	0.12	9.3	1100L	1100L
750220	1245	1				9.3	1100L	1100L
750220	1615	1	0.30	0.03	0.23	14.2	1100L	1100L
750219								
	NUMBER	5	3	3	3	4	4	4
	MAXIMUM	2	0.45	0.04	0.28	17.1	1100L	1100L
	MINIMUM	1	0.30	0.03K	0.12	9.3	1100L	1100L
	MEAN	1	0.35	0.04	0.21	12.5	1100	1100
	LOG MEAN	1	0.34	0.04	0.20	12.0	1100	1100
750220								

SURF CITY

STATION - FF-SURF-012 KINGS CK-AT MOUTH & N END OF ISL N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00400 PH SU	00480 SALINITY PPTH	00610 NH3-N TOTAL MG/L
750219	1130	1	50	14.9	2000	8.4	7.0	24.5	0.06
750219	1610	1	50	15.5	2000	7.2	6.9	17.0	
750219	1611	2	50	15.3	2000	7.2		18.5	
750220	1245	1	50	13.0	2000	8.3	7.1	14.0	
750220	1625	1	50	13.5	2000	8.8	7.3	13.5	0.04
750220	1626	2	50	13.5	2000	8.5		14.0	
750219									
	NUMBER	6		6	6	6	4	6	2
	MAXIMUM	2		15.5	2000	8.8	7.3	24.5	0.06
	MINIMUM	1		13.0	2000	7.2	6.9	13.5	0.04
	MEAN	1		14.3	2000	8.1	7.1	16.9	0.05
	LOG MEAN	1		14.2	2000	8.0	7.1	16.5	0.05
750220									

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750219	1130	1	0.30	0.12	0.07	16.0	1100L	1100L
750219	1610	1				14.3		
750220	1245	1				14.0	1100L	1100
750220	1625	1	0.28	0.04	0.04	10.8		
750219								
	NUMBER	6	2	2	2	4	2	2
	MAXIMUM	2	0.30	0.12	0.07	16.0	1100L	1100L
	MINIMUM	1	0.28	0.04	0.04	10.8	1100L	1100
	MEAN	1	0.29	0.08	0.05	13.8	1100	1100
	LOG MEAN	1	0.29	0.07	0.05	13.6	1100	1100
750220								

STATION - FF-SURF-013 INTRACOASTAL WW N OF W.ONSLOW BE N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	1110	1	50	14.9	2000	9.2			24.1		
750219	1111	2	50	14.8	2000	9.0			24.1		
750219	1112	3	50	14.7	2000	9.0			24.2		
750219	1113	4	50	14.8	2000	8.9			24.5		
750219	1114	5	50	14.6	2000	9.0			24.3		
750219	1115	6	50	14.8	2000	8.8		7.8	24.2		0.03
750219	1116	7	50	14.9	2000	8.8			24.5		
750219	1117	8	50	14.7	2000	8.8			24.5		
750219	1118	9	50	14.4	2000	8.7			24.5		
750219	1119	10	50	14.4	2000	8.7			24.5		
750219	1555	1	50	15.4	2000	8.4			15.4		
750219	1556	2	50	15.1	2000	8.5			19.1		
750219	1557	3	50	14.9	2000	8.5			21.0		
750219	1558	4	50	15.0	2000	8.4			21.2		
750219	1559	5	50	14.8	2000	8.4			21.2		
750219	1600	6	50	14.7	2000	8.3			21.8		
750219	1601	7	50	14.6	2000	8.4			21.9		
750219	1602	8	50	14.6	2000	8.4			22.1		
750219	1603	9	50	14.4	2000	8.4			22.2		
750219	1604	10	50	14.4	2000	8.3			22.3		
750219	1605	11	50	14.4	2000	8.4			22.2		
750219	1606	12	50	14.4	2000	8.3			22.3		
750219	1607	13	50	14.6	2000	8.3			22.3		
750219	1608	14	50	14.5	2000	8.4			22.1		
750219	1609	15	50	14.5	2000	8.4			22.1		
750220	1251	1	50	13.2	2000	8.7			16.5		
750220	1252	2	50	13.2	2000	8.8			16.5		
750220	1253	3	50	13.5	2000	8.8			16.5		
750220	1254	4	50	13.5	2000	8.8			17.0		
750220	1255	5	50	13.5	2000	8.8			17.0		
750220	1256	6	50	13.5	2000	8.8			17.0		
750220	1257	7	50	13.0	2000	8.9			17.5		
750220	1258	8	50	13.5	2000	8.8		7.8	18.0		
750220	1259	9	50	13.5	2000	8.8			18.0		
750220	1300	10	50	14.0	2000	8.2			19.0		
750220	1301	11	50	14.0	2000	8.0			19.5		
750220	1302	12	50	14.5	2000				20.0		
750220	1303	13	50	14.5	2000	7.9			20.0		
750220	1304	14	50	14.5	2000	7.9			20.5		
750220	1305	15	50	15.0	2000	7.7			21.5		
750220	1634	1	50	13.5	2000	8.6			17.0		
750220	1635	2	50	13.5	2000	8.7			17.0		
750220	1636	3	50	13.5	2000	8.5			18.0		
750220	1637	4	50	13.5	2000	8.5			18.0		
750220	1638	5	50	13.5	2000	8.4			18.5		

STATION - FF-SURF-013 INTRACOASTAL WW N OF W.ONSLOW BE N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750220	1639	6	50	14.0	2000	8.2			19.0		
750220	1640	7	50	14.0	2000	8.2			19.0		
750220	1641	8	50	14.0	2000	8.1		7.6	19.0		0.02
750220	1642	9	50	14.0	2000	8.1			19.0		
750220	1643	10	50	14.0	2000	8.1			19.0		
750220	1644	11	50	14.0	2000	8.0			19.0		
750220	1645	12	50	14.5	2000	8.0			18.7		
750220	1646	13	50	14.5	2000	8.0			18.7		
750220	1647	14	50	15.0	2000	8.0			18.5		
750709	1825	1		28.8	2000	7.1			34.5		
750709	1826	2		29.0	2000	6.9		7.9	34.3		0.04
750709	1827	3		29.0	2000				34.2		
750709	2050	1		28.8	2000	8.6			34.5		
750709	2051	2		28.7	2000	8.6			34.6		
750709	2052	3		28.8	2000				34.6		
750710	0611	1		26.6	2000	6.5			33.6		
750710	0612	2		26.8	2000	6.6			33.8		
750710	0613	3		27.6	2000	6.6			34.2		
750710	0614	4		27.1	2000	6.7			34.3		
750710	0615	5		27.2	2000	6.8			34.7		
750710	0616	6		27.4	2000	6.9			34.6		
750710	0617	7		27.4	2000	6.9			34.7		0.05
750710	0618	8		27.4	2000	6.9			34.7		
750710	0619	9		27.4	2000	6.8			34.8		
750710	0620	10		27.5	2000	6.9			34.8		
750710	0621	11		27.5	2000	6.9			34.3		
750710	0622	12		27.4	2000	6.8			35.0		
750710	0623	13		27.4	2000	6.8			35.0		
750710	0624	14		27.5	2000				34.2		
750710	0900	1		26.9	2000	6.8			34.6		
750710	0901	2		27.0	2000	6.8			34.6		
750710	0902	3		26.9	2000	6.6			34.7		
750710	0903	4		26.9	2000	6.6			34.8		
750710	0904	5		26.9	2000	6.5			34.5		
750710	0905	6		27.1	2000	6.5			34.6		
750710	0906	7		27.0	2000	6.6			34.6		
750710	0907	8		26.8	2000	6.6			34.4		
750710	0908	9		27.0	2000	6.5			34.7		
750710	0909	10		27.0	2000	6.5			34.5		
750710	0910	11		27.1	2000				34.2		
750710	1200	1		27.6	2000	6.3			34.6		
750710	1201	2		27.5	2000	6.3			34.3		
750710	1202	3		27.5	2000	6.4			34.7		
750710	1203	4		27.5	2000	6.5			34.7		
750710	1204	5		27.5	2000	6.5			34.7		

STATION - FF-SURF-013 INTRACOASTAL WW N OF W.ONSLOW BE N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	1205	6		27.5	2000	6.5			34.7		0.06
750710	1206	7		27.5	2000	6.5			34.7		
750710	1207	8		27.4	2000	6.6			34.6		
750710	1208	9		27.5	2000	6.6			34.7		
750710	1209	10		27.4	2000	6.7			34.6		
750710	1210	11		27.6	2000				34.2		
750710	1450	1		28.3	2000	6.2			34.8		
750710	1451	2		28.2	2000	6.3			34.9		
750710	1452	3		28.2	2000	6.4			30.3		
750710	1453	4		28.2	2000	6.4			30.5		
750710	1454	5		28.2	2000	6.5			35.0		
750710	1455	6		28.2	2000	6.5			34.1		
750710	1456	7		28.2	2000	6.5			34.9		
750710	1457	8		28.2	2000	6.5			34.4		
750710	1458	9		28.1	2000	6.5			33.8		
750710	1459	10		28.6	2000	6.4			34.9		
750710	1500	11		28.0	2000	6.2			34.9		
750710	1501	12		28.0	2000	6.1			34.9		
750710	1502	13		27.0	2000	6.0			35.0		
750710	1503	14		27.7	2000	6.0			34.6		
750710	1504	15		27.7	2000	5.9			34.5		
750710	1505	16		27.6	2000				33.9		
750710	1705	1		28.8	2000	7.1			34.5		
750710	1706	2		28.9	2000	7.2			34.0		
750710	1707	3		28.7	2000	7.2			34.6		
750710	1708	4		28.7	2000	7.2			34.9		
750710	1709	5		28.8	2000	7.2			34.7		
750710	1710	6		28.8	2000	7.2			34.8		
750710	1711	7		28.7	2000	7.3		7.9	34.9		0.04
750710	1712	8		28.8	2000	7.2			34.8		
750710	1713	9		28.7	2000	7.2			34.7		
750710	1714	10		28.7	2000	7.3			33.9		
750710	1715	11		28.6	2000	7.3			34.7		
750710	1716	12		28.7	2000	7.3			34.8		
750710	1717	13		28.7	2000				34.7		
750710					2000		16600			30.60	
750219											
NUMBER		125		125	126	117	1	5	125	1	6
MAXIMUM		16		29.0	2000	9.2		7.9	35.0		0.06
MINIMUM		1		13.0	2000	5.9		7.6	15.4		0.02
MEAN		7		22.0	2000	7.5		7.8	28.3		0.04
LOG MEAN		6		20.8	2000	7.5		7.8	27.3		0.04
750710											

STATION - FF-SURF-013 INTRACOASTAL WW N OF W.ONSLOW BE N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	1115	6	0.18		0.01	0.07		4.7		
750219	1602	8						5.7		
750220	1258	8						7.5		
750220	1641	8	0.19		0.02	0.05		7.1		
750709	1826	2	0.20		0.01K	1.08		6.0		
750710	0617	7	0.15		0.01K	0.12		5.3		
750710	1205	6	0.22		0.01K	0.10		9.7		
750710	1711	7	0.18		0.01K	0.12		5.5		
750710				900			480.0		1.00K	16.90
750219										
	NUMBER	125	6	1	6	6	1	8	1	1
	MAXIMUM	16	0.22		0.02	1.08		9.7		
	MINIMUM	1	0.15		0.01K	0.05		4.7		
	MEAN	7	0.19		0.01	0.26		6.4		
	LOG MEAN	6	0.19		0.01	0.13		6.3		
750710										

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70326 RESIDUE TOT VOL PERCENT	00940 CHLORIDE CL MG/L
750219	1110	1					460	93		
750220	1251	1					1100L	460		
750220	1302	12								8
750220	1634	1					1100	460		
750709	1825	1					18	5		
750710	0611	1					33	13		
750710	1200	1					5	2K		
750710	1705	1					22	2		
750710			1.90	9.10	6.50	13.80			2.4	
750219										
	NUMBER	125	1	1	1	1	7	7	1	1
	MAXIMUM	16					1100L	460		
	MINIMUM	1					5	2K		
	MEAN	7					391	148		
	LOG MEAN	6					87	24		
750710										

STATION - FF-SURF-014 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0925	1	50	14.4	2000	8.4			24.4		
750219	0926	2	50	14.2	2000	8.4			24.5		
750219	0927	3	50	14.1	2000	8.4		8.4	24.5		0.03
750219	0928	4	50	13.9	2000	8.4			24.7		
750219	0929	5	50	14.0	2000	8.4			24.7		
750219	0930	6	50	14.0	2000	8.3			24.7		
750219	1430	1	50	15.2	2000	8.4			18.1		
750219	1431	2	50	15.2	2000	8.4			18.0		
750219	1432	3	50	14.9	2000	8.3			19.6		
750219	1433	4	50	14.7	2000	8.2			19.7		0.05K
750219	1434	5	50	14.7	2000	8.1			20.0		
750219	1435	6	50	13.7	2000	7.8			21.9		
750219	1436	7	50	13.6	2000	7.7			21.9		
750220	1045	1	50	12.3	2000	8.7			18.5		
750220	1046	2	50	12.6	2000	8.6			18.7		
750220	1047	3	50	12.6	2000	8.6		7.8	18.7		
750220	1048	4	50	13.0	2000	8.2			19.3		
750220	1049	5	50	12.8	2000	7.5			21.3		
750220	1050	6	50	12.4	2000	6.8			22.1		
750220	1051	7	50	12.3	2000	6.6			22.2		
750220	1620	1	50	12.5	2000	8.6			18.1		
750220	1621	2	50	12.9	2000	8.6			18.2		
750220	1622	3	50	12.9	2000	8.6			18.2		
750220	1623	4	50	12.8	2000	8.5		8.0	18.4		0.01
750220	1624	5	50	12.8	2000	8.3			18.7		
750220	1625	6	50	12.8	2000	8.1			20.5		
750220	1626	7	50	12.8	2000	6.8			21.7		
750220	1627	8	50	12.7	2000	5.3			22.7		
750324	0925	1		17.5	37	6.9		8.1	27.5		0.05K
750324	0925	3		17.5	37	6.9		8.1	27.5		0.05K
750324	1523	1		20.0	37	7.5		8.3	24.0		0.05K
750324	1523	3		20.0	37	7.5		8.3	24.0		0.05K
750422	0845	1		18.0	37	6.2		8.0	29.0		0.05K
750422	0845	3		18.0	37	6.2		8.0	29.0		0.05K
750422	1400	1		21.0	37	7.8		8.0	27.0		0.05K
750422	1400	3		21.0	37	7.8		8.0	27.0		0.05K
750520	0845	3		24.0	37	4.2		8.3	30.0		
750520	1400	3		26.0	37	5.2		8.6	31.0		
750623	1054	1			37						
750623	1537	1			37						
750709	1705	1		29.3	2000	9.0			33.3		
750709	1706	2		29.3	2000	8.9			33.7		
750709	1707	3		29.2	2000	8.5			33.3		
750709	1708	4		29.3	2000	8.5		7.9	33.8		0.03K
750709	1709	5		29.0	2000	8.3			32.2		

STATION - FF-SURF-014 CANAL NW.OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	1710	6		28.9	2000	8.2			34.1		
750709	1711	7		29.1	2000				32.4		
750709	2110	1		28.7	2000	8.4			34.6		
750709	2111	2		28.6	2000	8.4			34.6		
750709	2112	3		28.6	2000				34.1		
750709	2300	1			2000						
750710	0015	1		27.9	2000	8.8			35.0		
750710	0016	2		27.7	2000	8.8			35.1		
750710	0017	3		27.9	2000				35.2		
750710	0018	4		28.0	2000				34.8		
750710	0300	1		27.8	2000	8.6			32.9		
750710	0301	2		27.7	2000	8.7			34.9		
750710	0302	3		27.8	2000	8.3			35.3		0.03K
750710	0303	4		28.1	2000	8.1			34.0		
750710	0304	5		27.5	2000				32.1		
750710	0625	1		27.4	2000	6.3			32.8		
750710	0626	2		27.3	2000	6.3			33.1		
750710	0627	3		27.4	2000	6.2			33.2		0.03K
750710	0628	4		27.3	2000	6.3			32.8		
750710	0629	5		27.5	2000	6.3			34.1		
750710	0630	6		27.5	2000				34.3		
750710	0915	1		27.0	2000	6.1			33.2		
750710	0916	2		27.0	2000	6.1			33.2		
750710	0917	3		26.8	2000	6.1			33.2		
750710	0918	4		26.7	2000	6.2			33.8		
750710	0919	5		26.7	2000	6.2			33.9		
750710	0920	6		26.9	2000	6.2			34.2		
750710	0921	7		27.0	2000				34.3		
750710	1220	1		27.9	2000	6.7			33.5		
750710	1221	2		27.9	2000	6.7			33.9		
750710	1222	3		27.9	2000	6.8			33.8		
750710	1223	4		27.8	2000	6.8		7.9	33.9		0.03K
750710	1224	5		27.8	2000	6.8			34.5		
750710	1225	6		27.7	2000	6.8			34.6		
750710	1226	7		27.6	2000				34.7		
750710	1508	1		28.9	2000	6.9			31.2		
750710	1509	2		29.0	2000	6.8			32.9		
750710	1510	3		28.9	2000	6.8			31.2		
750710	1511	4		29.0	2000	6.8			33.1		
750710	1512	5		28.9	2000	6.8			33.3		
750710	1513	6		28.6	2000	6.8			33.5		
750710	1514	7		28.6	2000				33.5		
750710	1720	1		28.9	2000	7.4			32.9		
750710	1721	2		29.1	2000	7.5			33.0		
750710	1722	3		28.9	2000	7.7			32.9		

STATION - FF-SURF-014 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00082 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	1723	4		29.2	2000	7.8			33.7		0.03K
750710	1724	5		28.8	2000	7.7			34.0		
750710	1725	6		28.9	2000	7.6			34.1		
750710	1726	7		28.7	2000				34.5		
750710					2000		89200			67.40	
750219											
	NUMBER	94		91	95	81	1	15	91	1	16
	MAXIMUM	8		29.3	2000	9.0		8.6	35.3		0.03
	MINIMUM	1		12.3	37	4.2		7.8	18.0		0.01K
	MEAN	4		22.8	1752	7.5		8.1	29.1		0.04
	LOG MEAN	3		21.6	1208	7.4		8.1	28.4		0.04
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	0927	3	0.22		0.01	0.17		8.5		
750219	1433	4	0.30		0.05K	0.07		6.8		
750220	1047	3						7.5		
750220	1623	4	0.19		0.02	0.07		6.0		
750324	0925	1	0.30		0.05K	0.07		30.0K		
750324	0925	3	0.30		0.05K	0.07		30.0K		
750324	1523	1	0.30		0.05K	0.07		30.0K		
750324	1523	3	0.30		0.05K	0.07		30.0K		
750422	0845	1	0.30		0.05K	0.05K		10.0K		
750422	0845	3	0.30		0.05K	0.05K		10.0K		
750422	1400	1	0.30		0.05K	0.05K		10.0K		
750422	1400	3	0.30		0.05K	0.05K		10.0K		
750709	1708	4	0.31		0.01K	0.12		8.7		
750710	0302	3	0.20		0.01K	0.19		4.5		
750710	0627	3	0.27		0.01K	0.11		5.3		
750710	1223	4	0.25		0.01K	0.11		5.0		
750710	1723	4	0.27		0.01K	0.11		6.2		
750710				2375			855.0		1.00K	63.00
750219										
	NUMBER	94	18	1	16	16	1	17	1	1
	MAXIMUM	8	0.31		0.02	0.19		8.7		
	MINIMUM	1	0.18		0.01K	0.05K		4.5K		
	MEAN	4	0.28		0.03	0.09		12.9		
	LOG MEAN	3	0.27		0.03	0.08		10.2		
750710										

STATION - FF-SURF-014 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	00300 DO MG/L
750219	0925	1					1100L	1100L		
750219	1430	1					1100L	1100L		
750220	1045	1					1100	460		8.6
750220	1050	6								7.0
750220	1620	1					1100	460		
750324	0925	1					240	29		
750324	1523	1					9	9		
750422	0845	1					9	4		
750422	1400	1					3K	3K		
750623	1054	1					7	3K		
750623	1537	1					3K	3K		
750709	1705	1					94	49		
750709	2300	1					63	2		
750710	0625	1					49	33		
750710	1220	1					240	4		
750710	1720	1					49	2		
750710			8.50	33.00	14.00	58.00			10.8	
750219										
NUMBER		94	1	1	1	1	15	15	1	2
MAXIMUM		8					1100L	1100L		8.6
MINIMUM		1					3K	2K		7.0
MEAN		4					344	217		7.8
LOG MEAN		3					71	22		7.8
750710										

STATION - FF-SURF-015 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0930	1	50	14.5	2000	8.4			24.5		
750219	0931	2	50	14.5	2000	8.4			24.6		
750219	0932	3	50	13.5	2000	9.2			25.1		
750219	0933	4	50	13.1	2000	8.0		8.4	25.1		0.03
750219	0934	5	50	12.8	2000	7.6			25.6		
750219	0935	6	50	12.8	2000	7.3			26.0		
750219	0936	7	50	11.9	2000	6.8			26.1		
750219	0937	8	50	11.7	2000	6.4			26.0		
750219	0938	9	50	11.7	2000	5.0			26.2		
750219	0939	10	50	11.9	2000	5.1			26.2		
750219	0940	11	50	12.1	2000	5.2			25.9		
750219	1440	1	50	14.9	2000	9.6			18.0		
750219	1441	2	50	14.8	2000	9.1			18.8		
750219	1442	3	50	14.7	2000	9.0			18.3		
750219	1443	4	50	13.6	2000	8.9			18.9		
750219	1444	5	50	13.1	2000	8.9			20.7		0.05K
750219	1445	6	50	13.2	2000	7.4			22.0		
750219	1446	7	50	13.6	2000	7.4			22.4		
750219	1447	8	50	13.7	2000	7.2			22.5		
750219	1448	9	50	13.0	2000	6.4			22.7		
750219	1449	10	50	12.1	2000	0.4			25.9		
750220	1100	1	50	12.7	2000	8.3			19.3		
750220	1101	2	50	12.8	2000	8.3			19.3		
750220	1102	3	50	12.8	2000	8.3			19.3		
750220	1103	4	50	12.8	2000	8.0			20.0		
750220	1104	5	50	13.1	2000	7.8			20.7		
750220	1105	6	50	12.7	2000	7.1			21.6		
750220	1106	7	50	12.8	2000	7.2			22.1		
750220	1107	8	50	12.2	2000	6.7			22.4		
750220	1108	9	50	12.2	2000	5.0			22.7		
750220	1630	1	50	12.7	2000	8.4			18.9		
750220	1631	2	50	12.8	2000	8.5			19.3		
750220	1632	3	50	12.9	2000	8.5			19.1		
750220	1633	4	50	12.9	2000	8.5		8.1	19.3		0.04
750220	1634	5	50	13.2	2000	8.1			20.3		
750220	1635	6	50	13.2	2000	7.9			20.8		
750220	1636	7	50	12.7	2000	7.4			21.8		
750220	1637	8	50	12.5	2000	7.0			22.0		
750220	1638	9	50	11.8	2000	4.8			22.6		
750220	1639	10	50	11.9	2000	1.1			23.1		
750324	0935	1		18.0	37	7.3		8.1	26.0		0.05K
750324	0935	6		18.0	37	7.3		8.1	26.0		0.05K
750324	1545	1		18.0	37	8.0		8.2	23.5		0.05K
750324	1545	6		18.0	37	8.0		8.2	23.5		0.05K
750422	0825	1		18.5	37	6.3		8.2	28.0		0.05K

STATION - FF-SURF-015 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750422	0825	6		18.5	37	6.3		8.2	28.0		0.05K
750422	1419	1		21.0	37	7.4		8.1	27.0		0.05K
750422	1419	6		21.0	37	7.4		8.1	27.0		0.05K
750520	0345	6		24.0	37	4.0		8.3	30.0		
750520	1400	6		26.0	37	6.0		8.6	31.0		
750623	1058	1			37						
750623	1542	1			37						
750709	1725	1		29.1	2000	8.3			31.8		
750709	1726	2		29.0	2000	8.3			31.9		
750709	1727	3		28.9	2000	8.3			31.8		
750709	1728	4		29.1	2000	8.2		7.9	31.8		0.03K
750709	1729	5		29.0	2000	7.9			32.2		
750709	1730	6		28.2	2000	6.4			33.5		
750709	1731	7		28.3	2000	6.7			34.0		
750709	1732	8		28.3	2000				34.1		
750709	2125	1		28.5	2000	9.6			32.3		
750709	2126	2		28.5	2000	9.1			32.0		
750709	2127	3		28.7	2000	8.4			32.2		
750709	2128	4		28.7	2000				33.7		
750709	2335	1		28.3	2000	9.6			32.5		
750709	2336	2		28.2	2000	9.6			32.7		
750709	2337	3		28.3	2000	9.6			32.7		
750709	2338	4		28.5	2000	9.4		7.9	33.4		0.04
750709	2339	5		28.5	2000	8.5			33.9		
750709	2340	6		28.4	2000	9.1			33.5		
750709	2341	7		28.6	2000				34.0		
750710	0220	1		27.7	2000	8.5			32.5		
750710	0221	2		27.8	2000	8.3			32.6		
750710	0222	3		28.1	2000	8.1			33.1		
750710	0223	4		27.9	2000	8.0			33.0		
750710	0224	5		28.1	2000				34.0		
750710	0635	1		27.4	2000	5.8			32.3		
750710	0636	2		27.4	2000	5.9			32.3		
750710	0637	3		27.3	2000	5.8			32.6		
750710	0638	4		27.3	2000	5.7			32.5		
750710	0639	5		27.9	2000	5.6		7.5	33.0		0.04
750710	0640	6		27.3	2000	5.6			32.8		
750710	0641	7		27.8	2000	5.7			33.4		
750710	0642	8		27.8	2000	5.7			33.5		
750710	0643	9		27.7	2000	5.6			33.5		
750710	0644	10		27.8	2000				32.1		
750710	0923	1		27.3	2000	6.8			31.8		
750710	0924	2		27.4	2000	6.8			32.0		
750710	0925	3		27.4	2000	6.8			31.8		
750710	0926	4		27.2	2000	6.6			32.2		

SURF CITY

STATION - FF-SURF-015 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	0927	5		27.3	2000	6.0			32.5		
750710	0928	6		27.7	2000	5.6			33.1		
750710	0929	7		27.8	2000	5.7			33.1		
750710	0930	8		27.7	2000	5.6			32.6		
750710	0931	9		27.8	2000				33.2		
750710	1230	1		28.1	2000	7.2			32.2		
750710	1231	2		28.0	2000	7.2			31.5		
750710	1232	3		28.0	2000	7.2			32.2		
750710	1233	4		27.9	2000	6.9			32.3		
750710	1234	5		27.7	2000	6.7		7.8	32.6		0.03K
750710	1235	6		27.5	2000	6.5			32.8		
750710	1236	7		27.6	2000	6.6			32.8		
750710	1237	8		27.5	2000	6.6			33.6		
750710	1238	9		27.4	2000	6.5			33.4		
750710	1239	10		27.5	2000	6.5			34.1		
750710	1240	11		27.4	2000				33.5		
750710	1515	1		29.3	2000	7.1			32.5		
750710	1516	2		29.3	2000	7.2			32.0		
750710	1517	3		29.0	2000	7.2			32.5		
750710	1518	4		28.9	2000	7.2			32.5		
750710	1519	5		28.8	2000	7.2			32.5		
750710	1520	6		28.7	2000	7.2			32.6		
750710	1521	7		28.7	2000	7.2			32.6		
750710	1522	8		28.6	2000	6.3			32.1		
750710	1523	9		28.1	2000	5.7			33.9		
750710	1524	10		27.7	2000				34.1		
750710	1730	1		28.7	2000	7.6			32.5		
750710	1731	2		28.7	2000	7.8			32.7		
750710	1732	3		28.7	2000	7.9			32.9		
750710	1733	4		28.7	2000	7.9			32.7		
750710	1734	5		28.8	2000	7.9			32.5		
750710	1735	6		28.9	2000	7.8			32.8		
750710	1736	7		28.8	2000	7.8			32.7		
750710	1737	8		28.8	2000	7.5			33.1		
750710	1738	9		28.1	2000	6.4			34.0		
750710	1739	10		27.9	2000	6.3			34.3		
750710	1740	11		27.8	2000		9600		34.2	29.90	
750710											

STATION - FF-SURF-015 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219											
NUMBER		127		125	128	116	1	16	125	1	15
MAXIMUM		11		29.3	2000	9.6		8.6	34.3		0.04
MINIMUM		1		11.7	37	0.4		7.5	18.0		0.03K
MEAN		5		22.6	1816	7.2		8.1	28.9		0.04
LOG MEAN		4		21.3	1376	6.9		8.1	28.4		0.04
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	0933	4	0.22		0.01	0.05		5.7		
750219	1444	5	0.30		0.05K	0.07		6.8		
750220	1102	3						7.5		
750220	1633	4	0.19		0.01	0.07		6.5		
750324	0935	1	0.30		0.05K	0.06		30.0K		
750324	0935	6	0.30		0.05K	0.06		30.0K		
750324	1545	1	0.40		0.05K	0.07		30.0K		
750324	1545	6	0.40		0.05K	0.07		30.0K		
750422	0825	1	0.30		0.05K	0.05K		10.0K		
750422	0825	6	0.30		0.05K	0.05K		10.0K		
750422	1419	1	0.30		0.05K	0.05K		10.0K		
750422	1419	6	0.30		0.05K	0.05K		10.0K		
750709	1728	4	0.25		0.01K	0.12		7.7		
750709	2338	4	0.27		0.01K	0.32		6.9		
750710	0639	5	0.31		0.01K	0.10		6.0		
750710	1235	6	0.31		0.01K	0.11		6.9		
750710				1000			1100.0		1.00K	12.00
750219										
NUMBER		127	15	1	15	15	1	16	1	1
MAXIMUM		11	0.40		0.01	0.32		7.7		
MINIMUM		1	0.19		0.01K	0.05K		5.7K		
MEAN		5	0.30		0.03	0.09		13.4		
LOG MEAN		4	0.29		0.03	0.07		10.8		
750710										

STATION - FF-SURF-015 CANAL NW OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	00300 DO MG/L
							1100L	1100L		
750219	0930	1					1100L	1100L		9.0
750219	1440	1								8.5
750219	1444	5					1100L	240		5.0
750220	1100	1								8.7
750220	1108	9					1100L	240		
750220	1630	1					15	4		
750324	0935	1					23	4		
750324	1545	1					3K	3K		
750422	0825	1					3K	3K		
750422	1419	1					4	3K		
750623	1058	1					4	4		
750623	1542	1					130	4		
750709	1725	1					79	4		
750709	2335	1					172	4		
750710	0635	1					23	2K		
750710	1230	1					58	2K		
750710	1730	1							1.7	
750710			0.98	4.90K	2.30	7.30				
750219							15	15	1	4
NUMBER		127	1	1	1	1	1100L	1100L		9.0
MAXIMUM		11					3K	2K		5.0
MINIMUM		1					328	181		7.8
MEAN		5					55	12		7.6
LOG MEAN		4								
750710										

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	0950	1	50	13.9	2000	9.1			24.6		
750219	0951	2	50	13.4	2000	9.2			25.1		
750219	0952	3	50	12.9	2000	8.8			24.9		
750219	0953	4	50	12.4	2000	8.4		7.8	25.4		0.02
750219	0954	5	50	12.1	2000	8.2			25.8		
750219	0955	6	50	12.1	2000	7.8			25.7		
750219	0956	7	50	11.6	2000	7.4			25.3		
750219	0957	8	50	11.5	2000	6.6			26.3		
750219	0958	9	50	11.6	2000	0.3			26.2		
750219	0959	10	50	11.8	2000	0.2			25.9		
750219	1500	1	50	14.8	2000	10.0			18.8		
750219	1501	2	50	13.4	2000	9.8			20.3		
750219	1502	3	50	12.6	2000	9.2			21.0		
750219	1503	4	50	12.4	2000	8.6			21.3		
750219	1504	5	50	12.0	2000	8.2			21.3		0.05K
750219	1505	6	50	12.0	2000	7.9			21.8		
750219	1506	7	50	11.6	2000	7.5			21.9		
750219	1507	8	50	11.5	2000	6.7			22.1		
750219	1508	9	50	11.4	2000	2.5			22.6		
750220	1120	1	50	12.3	2000	10.0			18.5		
750220	1121	2	50	12.5	2000	9.8			18.5		
750220	1122	3	50	12.7	2000	8.6			19.3		
750220	1123	4	50	13.4	2000	8.4			20.1		
750220	1124	5	50	13.3	2000	8.2			20.5		
750220	1125	6	50	12.4	2000	7.9		8.4	21.9		
750220	1126	7	50	11.6	2000	7.4			22.4		
750220	1127	8	50	11.5	2000	6.3			22.5		
750220	1128	9	50	11.5	2000	1.8			23.1		
750220	1129	10	50	11.8	2000	1.2			25.2		
750220	1130	11	50	12.2	2000	1.0			28.5		
750220	1645	1	50	12.3	2000	11.6			18.6		
750220	1646	2	50	12.4	2000	11.1			18.6		
750220	1647	3	50	12.7	2000	9.8			18.8		
750220	1648	4	50	12.9	2000	8.9			19.3		
750220	1649	5	50	13.1	2000	8.6		8.2	19.5		0.03
750220	1650	6	50	13.1	2000	8.2			19.7		
750220	1651	7	50	12.2	2000	8.0			21.5		
750220	1652	8	50	12.2	2000	7.2			21.7		
750220	1653	9	50	11.5	2000	6.7			22.2		
750220	1654	10	50	11.6	2000	1.3			22.9		
750220	1655	11	50	12.0	2000	0.9			26.1		
750220	1656	12	50	12.2	2000	0.8			28.9		
750324	0940	1		17.0	37	7.7		8.1	25.3		0.05K
750324	0940	5		17.0	37	7.7		8.1	25.3		0.05K
750324	1535	1		18.0	37	8.0		8.2	23.5		0.08

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750324	1535	5		18.0	37	8.0		8.2	23.5		0.08
750422	0833	1		20.0	37	6.4		8.1	29.0		0.05K
750422	0833	5		20.0	37	6.4		8.1	29.0		0.05K
750422	1423	1		20.0	37	7.1		8.1	27.0		0.05K
750422	1423	5		20.0	37	7.1		8.1	27.0		0.05K
750520	0845	5		25.0	37	4.0		8.3	30.0		
750520	1400	5		26.0	37	5.5		8.6	31.0		
750623	1104	1			37						
750623	1545	1			37						
750709	1740	1		28.3	2000	7.4			32.5		
750709	1741	2		28.3	2000	7.4			32.2		
750709	1742	3		28.1	2000	7.2			32.5		
750709	1743	4		27.8	2000	6.6			32.7		
750709	1744	5		27.7	2000	5.4		7.9	32.8		0.04
750709	1745	6		27.7	2000	5.2			33.4		
750709	1746	7		27.6	2000	5.0			33.4		
750709	1747	8		27.6	2000	4.4			33.4		
750709	1748	9		27.6	2000	4.4			33.3		
750709	1749	10		27.4	2000				33.3		
750709	2135	1		27.9	2000	9.6			32.4		
750709	2136	2		28.0	2000	8.5			32.4		
750709	2137	3		27.9	2000	8.4			32.6		
750709	2138	4		28.0	2000	8.2			32.5		
750709	2139	5		27.8	2000	5.6			32.8		
750709	2140	6		27.6	2000	5.2			33.1		
750709	2141	7		27.6	2000				33.4		
750709	2315	1		28.0	2000	8.2			32.6		
750709	2316	2		28.0	2000	8.2			32.6		
750709	2317	3		27.9	2000	7.9			32.7		
750709	2318	4		27.9	2000	7.4		7.9	32.5		0.04
750709	2319	5		27.8	2000	5.4			33.1		
750709	2320	6		27.7	2000	5.1			33.5		
750709	2321	7		27.5	2000				33.5		
750710	0203	1		27.4	2000	7.6			32.6		
750710	0206	2		27.6	2000	7.5			32.7		
750710	0207	3		27.7	2000	6.1			32.7		
750710	0208	4		27.6	2000	5.8			33.1		
750710	0209	5		27.5	2000	5.2			33.2		
750710	0210	6		27.5	2000	5.0			33.3		
750710	0211	7		27.4	2000	4.8			33.4		
750710	0212	8		27.6	2000	3.8			33.5		
750710	0213	9		27.6	2000				33.4		
750710	0700	1		27.0	2000	6.4			32.1		
750710	0701	2		26.9	2000	6.2			32.0		
750710	0702	3		27.0	2000	6.2			32.3		

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	0703	4		27.0	2000	6.1			32.3		
750710	0704	5		27.1	2000	6.2			32.3		
750710	0705	6		27.0	2000	6.1			31.8		
750710	0706	7		27.4	2000	6.0		7.7	32.6		0.04
750710	0707	8		27.5	2000	5.0			33.1		
750710	0708	9		27.4	2000	4.4			33.0		
750710	0709	10		27.4	2000	4.0			33.2		
750710	0710	11		27.4	2000	4.0			33.3		
750710	0711	12		27.5	2000	4.4			33.3		
750710	0712	13		27.6	2000				33.7		
750710	0935	1		27.1	2000	6.6			32.3		
750710	0936	2		27.1	2000	6.6			32.4		
750710	0937	3		27.0	2000	6.6			32.1		
750710	0938	4		27.0	2000	6.5			32.3		
750710	0939	5		27.0	2000	6.5			32.3		
750710	0940	6		27.0	2000	6.1			32.0		
750710	0941	7		27.5	2000	4.6			32.6		
750710	0942	8		27.5	2000	3.8			32.9		
750710	0943	9		27.5	2000	2.8			32.8		
750710	0944	10		27.6	2000	4.1			33.3		
750710	0945	11		27.6	2000				33.4		
750710	1243	1		27.8	2000	7.2			32.3		
750710	1244	2		27.8	2000	7.2			32.2		
750710	1245	3		27.7	2000	7.1			32.1		
750710	1246	4		27.6	2000	6.0			32.2		
750710	1247	5		27.6	2000	4.8			33.1		
750710	1248	6		27.6	2000	3.6			33.2		
750710	1249	7		27.6	2000	3.4		7.9	33.4		0.04
750710	1250	8		27.7	2000	4.7			32.6		
750710	1251	9		27.9	2000	4.8			33.7		
750710	1252	10		27.8	2000	4.5			33.8		
750710	1253	11		27.8	2000	4.4			33.9		
750710	1254	12		27.9	2000	4.3			32.6		
750710	1255	13		27.8	2000	4.2			33.8		
750710	1256	14		27.9	2000				34.0		
750710	1530	1		28.1	2000	5.2			33.3		
750710	1531	2		28.2	2000	5.2			32.5		
750710	1532	3		28.2	2000	5.2			32.1		
750710	1533	4		28.0	2000	5.0			33.5		
750710	1534	5		28.0	2000	5.0			33.2		
750710	1535	6		28.0	2000	4.8			33.4		
750710	1536	7		27.9	2000	4.8			33.0		
750710	1537	8		27.7	2000	4.6			33.7		
750710	1538	9		27.8	2000	4.3			34.0		
750710	1539	10		27.8	2000	4.2			33.9		

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	1540	11		27.8	2000	4.2			34.0		
750710	1541	12		27.8	2000	4.1			34.0		
750710	1542	13		27.7	2000	4.1			34.0		
750710	1543	14		27.7	2000				33.9		
750710	1745	1		28.1	2000	6.4			33.3		
750710	1746	2		28.0	2000	6.4			33.4		
750710	1747	3		28.0	2000	6.3			33.7		
750710	1748	4		27.9	2000	6.3			33.4		
750710	1749	5		27.9		6.4			33.6		
750710	1750	6		27.9		6.4			33.5		0.06
750710	1751	7		28.0		6.1			33.5		
750710	1752	8		27.9		5.1			33.8		
750710	1753	9		27.9		5.2			33.7		
750710	1754	10		27.5	2000	5.0			33.9		
750710	1755	11		27.7		4.9			34.0		
750710	1756	12		27.8	2000	4.7			34.0		
750710	1757	13		27.7	2000				34.0		
750710					2000		9200			26.00	
750219											
NUMBER		152		150	147	141	1	17	150	1	16
MAXIMUM		14		28.3	2000	11.6		8.6	34.0		0.08
MINIMUM		1		11.4	37	0.2		7.7	18.5		0.02K
MEAN		6		22.9	1840	6.1		8.1	29.7		0.05
LOG MEAN		5		21.6	1444	5.5		8.1	29.2		0.05
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU
750219	0953	4	0.30		0.01	0.05		6.8			
750219	1504	5	0.40		0.05K	0.06		6.5			
750220	1125	6						8.2			
750220	1649	5	0.28		0.01	0.07		8.0			
750324	0940	1	0.30		0.05K	0.07		30.0K			
750324	0940	5	0.30		0.05K	0.07		30.0K			
750324	1535	1	0.40		0.05K	0.10		30.0K			
750324	1535	5	0.40		0.05K	0.10		30.0K			
750422	0833	1	0.30		0.05K	0.05K		10.0K			
750422	0833	5	0.30		0.05K	0.05K		10.0K			
750422	1423	1	0.30		0.05K	0.06		10.0K			
750422	1423	5	0.30		0.05K	0.06		10.0K			
750709	1744	5	0.20		0.01K	0.12		6.2			

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR	01043 CU MUD DRY WGT MG/KG-CU
750709	2318	4	0.31		0.01K	0.13		6.0			
750710	0706	7	0.35		0.01K	0.11		6.9			
750710	1249	7	0.27		0.01K	0.12		6.2			
750710	1750	6	0.27		0.01K	0.11		6.0			
750710				750			500.0		1.00K	6.10	0.98K
750219											
	NUMBER	152	16	1	16	16	1	17	1	1	1
	MAXIMUM	14	0.40		0.01	0.13		8.2			
	MINIMUM	1	0.20		0.01K	0.05K		6.0K			
	MEAN	6	0.31		0.03	0.08		13.0			
	LOG MEAN	5	0.31		0.02	0.08		10.5			
750710											

DATE	TIME	00003 DEPTH FEET	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L	00300 DO MG/L
750219	0950	1				460	460			10.0
750219	1500	1				1100L	1100L		0.1K	
750219	1504	5								2.4
750219	1508	9				1100	93			10.2
750220	1120	1							0.1K	
750220	1125	6								0.5
750220	1130	11				1100L	1100			11.8
750220	1645	1							0.1K	
750220	1649	5								0.0
750220	1656	12				23	9		0.1K	
750324	0940	1							0.1K	
750324	0940	5				23	9		0.1K	
750324	1535	1							0.1K	
750324	1535	5				4	4		0.1	
750422	0833	1							0.1	
750422	0833	5				4	4		0.1K	
750422	1423	1							0.1K	
750422	1423	5				4	3K			
750623	1104	1				7	3K			
750623	1545	1				109	23			
750709	1740	1				70	8			
750709	2315	1				130	17			
750710	0700	1				146	10			
750710	1243	1				130	79			
750710	1745	1								
750710			5.40	2.50	6.90			1.3		

STATION - FF-SURF-016 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE TIME	00003 DEPTH FEET	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	38260 MBAS MG/L	00300 DO MG/L
750219									
NUMBER	152	1	1	1	15	15	1	11	6
MAXIMUM	14				1100L	1100L		0.1	11.8
MINIMUM	1				4	3K		0.1K	0.0
MEAN	6				294	195		0.1	5.8
LOG MEAN	5				66	25		0.1	0.0
750710									

STATION - FF-SURF-017 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 MSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	1040	1	50	14.3	2000	8.3			24.4		
750219	1041	2	50	14.1	2000	8.3			24.7		
750219	1042	3	50	14.1	2000	8.1			24.6		
750219	1043	4	50	13.7	2000	7.8		8.2	25.3		0.04
750219	1044	5	50	12.7	2000	7.8			25.7		
750219	1045	6	50	12.0	2000	7.4			26.1		
750219	1046	7	50	11.9	2000	6.8			26.0		
750219	1047	8	50	11.9	2000	5.6			26.1		
750219	1048	9	50	12.0	2000	0.4			26.1		
750219	1049	10	50	11.9	2000	0.2			26.1		
750219	1520	1	50	14.9	2000	9.1			18.7		
750219	1521	2	50	14.6	2000	8.9			19.2		
750219	1522	3	50	13.6	2000	8.0			21.4		
750219	1523	4	50	13.4	2000	7.9			21.4		
750219	1524	5	50	12.7	2000	7.2			21.8		
750219	1525	6	50	12.4	2000	7.0			21.7		
750219	1526	7	50	12.0	2000	6.7			21.8		
750219	1527	8	50	11.8	2000	5.2			22.2		
750219	1528	9	50	11.9	2000	0.5			23.4		
750219	1529	10	50	11.8	2000	0.2			26.5		
750220	1150	1	50	12.8	2000	8.4			19.8		
750220	1151	2	50	12.7	2000	8.4			19.6		
750220	1152	3	50	12.9	2000	8.4			19.5		
750220	1153	4	50	13.1	2000	8.0		8.2	20.0		
750220	1154	5	50	13.2	2000	7.9			20.0		
750220	1155	6	50	12.7	2000	7.6			21.4		
750220	1156	7	50	11.9	2000	6.3			22.2		
750220	1157	8	50	11.8	2000	5.1			22.8		
750220	1158	9	50	12.1	2000	1.4			24.5		
750220	1705	1	50	12.7	2000	8.7			18.8		
750220	1706	2	50	12.7	2000	8.7			18.9		
750220	1707	3	50	12.7	2000	8.8			19.0		
750220	1708	4	50	12.6	2000	9.3		8.1	19.3		0.03
750220	1709	5	50	12.8	2000	8.9			19.6		
750220	1710	6	50	13.1	2000	7.9			19.8		
750220	1711	7	50	12.7	2000	7.6			21.3		
750220	1712	8	50	12.2	2000	6.1			21.7		
750220	1713	9	50	11.8	2000	3.8			23.2		
750220	1714	10	50	12.0	2000	0.9			25.8		
750709	1755	1		28.8	2000	7.1			32.7		
750709	1756	2		28.8	2000	7.1			32.7		
750709	1757	3		28.8	2000	6.6		7.9	32.9		0.03K
750709	1758	4		28.5	2000	5.9			33.2		
750709	1759	5		28.3	2000	5.8			33.5		
750709	1800	6		28.3	2000				33.7		

STATION - FF-SURF-017 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	2155	1		28.5	2000	9.4			33.1		
750709	2156	2		28.3	2000	9.6			32.8		
750709	2157	3		28.5	2000	9.8			33.0		
750709	2158	4		28.6	2000	9.2			33.0		
750709	2159	5		28.8	2000	9.6			33.4		
750709	2200	6		28.8	2000	9.2			33.8		
750709	2201	7		28.9	2000				33.0		
750709	2350	1		28.2	2000	9.1			33.0		
750709	2351	2		28.2	2000	8.9			32.8		0.04
750709	2352	3		28.0	2000	8.5		7.9	33.6		
750709	2353	4		28.4	2000	8.4			33.7		
750709	2354	5		28.2	2000				33.0		
750710	0230	1		27.8	2000	8.5			33.0		
750710	0231	2		27.8	2000	8.2			33.5		
750710	0232	3		28.2	2000	8.3			33.5		
750710	0233	4		28.5	2000				32.9		
750710	0722	1		27.4	2000	4.1			32.8		
750710	0723	2		27.5	2000	4.2			32.9		
750710	0724	3		27.5	2000	4.2			33.0		
750710	0725	4		27.5	2000	4.2			33.0		
750710	0726	5		27.4	2000	4.2		7.6	33.2		0.03K
750710	0727	6		27.5	2000	4.2			33.4		
750710	0728	7		27.5	2000	4.2			33.8		
750710	0729	8		27.5	2000	4.1			33.8		
750710	0730	9		27.3	2000	4.0			34.2		
750710	0731	10		27.3	2000	3.8			30.2		
750710	0732	11		27.2	2000				32.7		
750710	1013	1		27.5	2000	6.1			32.9		
750710	1014	2		27.5	2000	6.3			32.8		
750710	1015	3		27.4	2000	6.4			32.8		
750710	1016	4		27.4	2000	6.4			32.9		
750710	1017	5		27.4	2000	6.1			33.1		
750710	1018	6		27.4	2000	6.2			33.3		
750710	1019	7		27.3	2000	6.0			33.6		
750710	1020	8		27.5	2000	5.7			33.6		
750710	1021	9		27.4	2000	5.5			34.0		
750710	1022	10		27.2	2000	5.2			34.0		
750710	1023	11		27.3	2000				32.7		
750710	1300	1		28.5	2000	7.0			32.7		
750710	1301	2		28.3	2000	7.1			32.2		
750710	1302	3		28.2	2000	7.1			32.8		
750710	1303	4		27.9	2000	6.8			33.1		
750710	1304	5		27.7	2000	6.3			33.5		0.03K
750710	1305	6		27.7	2000	6.3		7.7	33.5		
750710	1306	7		27.7	2000	6.2			33.5		

STATION - FF-SURF-017 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	1307	8		27.6	2000	5.5			33.8		
750710	1308	9		27.7	2000	5.4			32.8		
750710	1309	10		27.4	2000	4.4			33.7		
750710	1310	11		27.5	2000				34.0		
750710	1545	1		28.9	2000	7.8			33.1		
750710	1546	2		29.9	2000	7.8			33.1		
750710	1547	3		29.1	2000	7.1			33.1		
750710	1548	4		29.0	2000	7.1			33.1		
750710	1549	5		29.0	2000	6.0			33.4		
750710	1550	6		27.7	2000	5.5			32.9		
750710	1551	7		27.7	2000	5.3			33.4		
750710	1552	8		27.6	2000	4.3			33.8		
750710	1553	9		27.4	2000	3.8			33.5		
750710	1554	10		27.6	2000				32.6		
750710	1805	1		28.6	2000	7.3			33.5		
750710	1806	2		28.8	2000	7.3			33.2		
750710	1807	3		28.8	2000	7.3			33.5		
750710	1808	4		28.7	2000	7.3			33.6		
750710	1809	5		28.8	2000	7.3			33.5		0.04
750710	1810	6		28.9	2000	7.3			33.5		
750710	1811	7		28.7	2000	6.5			33.8		
750710	1812	8		28.1	2000	5.4			33.2		
750710	1813	9		27.7	2000				33.4		
750710					2000		13600			31.80	
750219											
	NUMBER	113		113	114	104	1	7	113	1	7
	MAXIMUM	11		29.9	2000	9.8		8.2	34.2		0.04
	MINIMUM	1		11.8	2000	0.2		7.6	18.7		0.03K
	MEAN	5		22.8	2000	6.5		7.9	29.4		0.03
	LOG MEAN	4		21.3	2000	5.7		7.9	28.9		0.03
750710											

STATION - FF-SURF-017 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	1043	4	0.28		0.01	0.09		9.3		
750219	1524	5						6.2		
750220	1153	4						8.8		
750220	1708	4	0.19		0.01	0.07		6.5		
750709	1757	3	0.31		0.01K	0.12		7.5		
750709	2352	3	0.35		0.01K	0.13		6.2		
750710	0727	6	0.31		0.01K	0.11		6.2		
750710	1305	6	0.31		0.01K	0.12		7.5		
750710	1809	5	0.35		0.01K	0.11		6.5		
750710				700			730.0		1.00K	10.30
750219										
NUMBER		113	7	1	7	7	1	9	1	1
MAXIMUM		11	0.35		0.01	0.13		9.3		
MINIMUM		1	0.19		0.01K	0.07		6.2		
MEAN		5	0.30		0.01	0.11		7.2		
LOG MEAN		4	0.29		0.01	0.11		7.1		
750710										

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	00300 DO MG/L
750219	1040	1					1100L	460		8.1
750219	1524	5								2.0
750219	1529	10					1100	1100		8.4
750220	1150	1					460	460		9.0
750220	1705	1								0.9
750220	1714	10					79	8		
750709	1755	1					7	2		
750709	2350	1					49	2		
750710	0722	1					46	5		
750710	1300	1					17	2		
750710	1805	1							1.8	
750710			1.00	5.50	2.30	7.20				
750219										
NUMBER		113	1	1	1	1	8	8	1	5
MAXIMUM		11					1100L	1100		9.0
MINIMUM		1					7	2		0.9
MEAN		5					357	255		5.7
LOG MEAN		4					102	23		4.1
750710										

STATION - FF-SURF-018 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750219	1055	1	50	14.3	2000	9.2			24.6		
750219	1056	2	50	14.1	2000	9.2			24.7		
750219	1057	3	50	13.2	2000	8.8			25.1		
750219	1058	4	50	12.3	2000	8.5		7.6	25.7		0.05
750219	1059	5	50	12.0	2000	8.2			26.1		
750219	1100	6	50	11.9	2000	6.9			26.0		
750219	1101	7	50	11.7	2000	6.6			26.1		
750219	1102	8	50	11.7	2000	5.4			25.9		
750219	1103	9	50	11.7	2000	8.6			26.2		
750219	1535	1	50	14.5	2000	9.3			20.1		
750219	1536	2	50	14.1	2000	8.5			20.2		
750219	1537	3	50	13.9	2000	8.2			20.7		
750219	1538	4	50	13.6	2000	8.7			20.6		
750219	1539	5	50	12.1	2000	8.3			21.4		
750219	1540	6	50	12.0	2000	8.0			21.7		
750219	1541	7	50	11.8	2000	7.4			21.5		
750219	1542	8	50	11.6	2000	6.5			21.6		
750219	1543	9	50	11.8	2000	4.6			22.1		
750219	1544	10	50	12.0	2000	8.2			26.9		
750220	1200	1	50	12.2	2000	8.6			19.3		
750220	1201	2	50	12.6	2000	8.4			19.5		
750220	1202	3	50	13.2	2000	8.1			20.2		
750220	1203	4	50	13.1	2000	7.8		8.1	19.8		
750220	1204	5	50	13.2	2000	7.8			20.2		
750220	1205	6	50	12.7	2000	7.8			21.6		
750220	1725	1	50	11.7	2000	9.9			18.6		
750220	1726	2	50	11.8	2000	10.2			18.7		
750220	1727	3	50	12.1	2000	9.7		8.2	19.2		0.03
750220	1728	4	50	12.7	2000	8.8			19.5		
750220	1729	5	50	12.7	2000	8.7			19.5		
750220	1730	6	50	13.2	2000	7.9			19.9		
750220	1731	7	50	13.2	2000	7.7			20.1		
750709	1805	1		28.4	2000	6.7			32.6		
750709	1806	2		28.2	2000	6.4			32.7		
750709	1807	3		27.8	2000	5.2		7.8	32.6		0.04
750709	1808	4		27.4	2000	4.1			32.8		
750709	1809	5		27.2	2000	4.5			30.4		
750709	1810	6		27.4	2000				30.5		
750709	2210	1		27.9	2000	8.0			32.6		
750709	2211	2		28.1	2000	8.0			32.8		
750709	2212	3		27.7	2000	8.0			32.9		
750709	2213	4		28.8	2000	7.9			32.9		
750709	2214	5		28.1	2000	6.4			32.8		
750709	2215	6		27.6	2000	6.2			32.9		
750709	2216	7		27.7	2000	6.0			32.9		

STATION - FF-SURF-018 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 HSAMPLOC % FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750709	2217	8		27.6	2000	4.9			33.0		
750709	2218	9		27.4	2000				33.0		
750709	2355	1		27.7	2000	7.9			32.8		
750709	2356	2		27.6	2000	7.9			33.1		
750709	2357	3		27.6	2000	7.5		7.8	32.8		0.04
750709	2358	4		28.1	2000	6.4			33.0		
750709	2359	5		27.4	2000				33.0		
750710	0240	1		27.2	2000	6.9			32.7		
750710	0241	2		27.2	2000	7.2			32.7		
750710	0242	3		27.5	2000	7.4			33.5		
750710	0243	4		27.9	2000	7.2			33.8		
750710	0244	5		27.8	2000				33.2		
750710	0735	1		26.8	2000	3.6			32.7		
750710	0736	2		26.9	2000	3.6			32.7		
750710	0737	3		26.8	2000	3.6			32.7		
750710	0738	4		27.4	2000	3.5		7.5	33.0		0.04
750710	0739	5		27.8	2000	3.4			33.6		
750710	0740	6		27.8	2000	3.0			33.8		
750710	0741	7		27.8	2000	3.2			33.8		
750710	0742	8		27.7	2000				33.9		
750710	1025	1		27.3	2000	5.1			32.6		
750710	1026	2		27.2	2000	5.2			32.6		
750710	1027	3		27.1	2000	5.2			32.6		
750710	1028	4		27.2	2000	5.2			32.7		
750710	1029	5		27.8	2000	5.3			32.8		
750710	1030	6		27.9	2000	5.2			33.5		
750710	1031	7		27.9	2000	4.8			33.4		
750710	1032	8		27.8	2000	3.8			33.7		
750710	1033	9		27.8	2000				34.0		
750710	1315	1		28.2	2000	6.8			32.8		
750710	1316	2		28.2	2000	6.8			32.7		
750710	1317	3		28.1	2000	6.9			32.4		
750710	1318	4		27.9	2000	6.5		7.7	32.2		0.04
750710	1319	5		27.9	2000	4.2			32.5		
750710	1320	6		28.0	2000	4.2			32.6		
750710	1321	7		27.9	2000	4.6			33.2		
750710	1322	8		27.9	2000				32.8		
750710	1600	1		28.6	2000	6.7			33.1		
750710	1601	2		28.7	2000	6.7			32.9		
750710	1602	3		28.6	2000	6.6			33.2		
750710	1603	4		28.2	2000	6.6			33.3		
750710	1604	5		28.1	2000	6.0			33.2		
750710	1605	6		27.8	2000	5.5			33.2		
750710	1606	7		27.6	2000	5.2			33.7		
750710	1607	8		27.7	2000	4.2			33.6		

STATION - FF-SURF-018 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	00002 %SAMPLOC FROM RT BANK	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00299 DO PROBE MG/L	00339 COD MUD DRY WGT MG/KG	00400 PH SU	00480 SALINITY PPTH	00495 % MOIST. SEDIMENT SAMPLE	00610 NH3-N TOTAL MG/L
750710	1608	9		27.7	2000				32.7		
750710	1817	1		28.0	2000	7.8			33.5		
750710	1818	2		28.1	2000	7.8			33.2		
750710	1819	3		28.1	2000	7.8			33.3		
750710	1820	4		28.0	2000	7.8			33.3		0.04
750710	1821	5		28.1	2000	6.9			33.4		
750710	1822	6		28.1	2000	6.8			33.3		
750710	1823	7		28.0	2000	5.6			33.6		
750710	1824	8		27.7	2000				33.5		
750710					2000		7480			13.00	
750219											
NUMBER		99		99	100	90	1	7	99	1	7
MAXIMUM		10		28.8	2000	10.2		8.2	34.0		0.05
MINIMUM		1		11.6	2000	0.2		7.5	18.6		0.03
MEAN		4		22.9	2000	6.5		7.8	29.4		0.04
LOG MEAN		4		21.5	2000	6.0		7.8	28.9		0.04
750710											

DATE	TIME	00003 DEPTH FEET	00625 TOT KJEL N MG/L	00626 ORGAN. N MUD D WT MG/KG-N	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00668 PHOS MUD DRY WGT MG/KG-P	00680 T ORG C C MG/L	01028 CD MUD DRY WGT MG/KG-CD	01029 CR MUD DRY WGT MG/KG-CR
750219	1058	4	0.81		0.01	0.39		16.0		
750219	1539	5						6.5		
750220	1203	4						8.2		
750220	1727	3	0.24		0.01	0.26		7.1		
750709	1807	3	0.27		0.01K	0.12		7.7		
750709	2357	3	0.28		0.01K	0.13		6.2		
750710	0738	4	0.55		0.01K	0.12		6.0		
750710	1318	4	0.31		0.01K	0.12		6.2		
750710	1820	4	0.25		0.01K	0.12		6.9		
750710				750			880.0		1.00K	8.80
750219										
NUMBER		99	7	1	7	7	1	9	1	1
MAXIMUM		10	0.81		0.01	0.39		16.0		
MINIMUM		1	0.24		0.01K	0.12		6.0		
MEAN		4	0.39		0.01	0.18		7.9		
LOG MEAN		4	0.35		0.01	0.16		7.5		
750710										

STATION - FF-SURF-018 CANAL W OF W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00003 DEPTH FEET	01043 CU MUD DRY WGT MG/KG-CU	01052 PB MUD DRY WGT MG/KG-PB	01068 NI MUD DRY WGT MG/KG-NI	01093 ZN MUD DRY WGT MG/KG-ZN	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	70322 RESIDUE TOT VOL PERCENT	00300 DO MG/L
750219	1055	1					1100	460		
750219	1103	9								0.0
750219	1539	5								8.3
750219	1544	10								0.7
750220	1200	1					1100L	1100		8.5
750220	1205	6								7.8
750220	1725	1					1100L	240		10.3
750220	1731	7								7.9
750709	1805	1					141	33		
750709	2355	1					33	16		
750710	0735	1					542	11		
750710	1315	1					240	8		
750710	1817	1					33	4		
750710			1.00K	5.30	1.80	10.50			1.4	
750219										
NUMBER		99	1	1	1	1	8	8	1	7
MAXIMUM		10					1100L	1100		10.3
MINIMUM		1					33	4		0.0
MEAN		4					536	234		6.2
LOG MEAN		4					268	47		0.0
750710										

STATION - FF-W-002 WELL AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	0940	2000	8.2	4.50	5.60		0.16	4.8	3K	3K	51
750220	1605	2000	8.3	6.60	7.00	6.30	0.19	6.7	4	3K	455
750324		37							3K	3K	
750422		37							23	4	
750520		37							3K	3K	
750623		37							4	3K	
750711	1000	2000		1.34	2.32	0.02	0.05	6.0			17
750711	1100	2000							49	2K	
750711	1630	2000							27	2K	
750712	0900	2000		1.68	2.15	0.01K	0.10	5.1			15
750712	1130	2000							2K	2K	
750712	1730	2000							2	2K	
750220											
	NUMBER	12	2	4	4	3	4	4	10	10	4
	MAXIMUM	2000	8.3	6.60	7.00	6.30	0.19	6.7	49	4	455
	MINIMUM	37	8.2	1.34	2.15	0.01K	0.05	4.8	2K	2K	15
	MEAN	1346	8.2	3.53	4.27	2.11	0.12	5.4	12	3	135
	LOG MEAN	529	8.2	2.86	3.74	0.11	0.11	5.4	6	3	49
750712											

STATION - FF-W-002C CANAL ADJACENT WELL NO. 2 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	1000	2000	0.17	0.66	0.01	0.10	5.8	17500
750712	0900	2000	0.06	0.31	0.01K	0.20	4.3	17500
750711								
NUMBER		2	2	2	2	2	2	2
MAXIMUM		2000	0.17	0.66	0.01	0.20	5.8	17500
MINIMUM		2000	0.06	0.31	0.01K	0.10	4.3	17500
MEAN		2000	0.11	0.48	0.01	0.15	5.0	17500
LOG MEAN		2000	0.10	0.45	0.01	0.14	5.0	17500
750712								

STATION - FF-W-003 WELL AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	38260 MBAS MG/L	00940 CHLORIDE CL MG/L
750220	1000	2000	8.1	3.90	6.10		4.20	85.0	4	3K		180
750220	1630	2000	8.1	5.50	5.50		5.10	52.0	4	3K		150
750324		37	8.5	3.20	6.20	0.05K	0.94	30.0K	4	3K	0.1K	120
750422		37	8.2	3.10	10.00	0.05K	0.80		44	3K		500
750520		37	8.1						7	3K		1000K
750711	1115	2000							2K	2K		
750712	1030			18.00		0.07	4.50					6300
750712	1737	2000							2K	2K		
750220												
NUMBER		7	5	5	4	3	5	3	7	7	1	6
MAXIMUM		2000	8.5	18.00	10.00	0.07	8.80	85.0	44	3K		6300
MINIMUM		37	8.1	3.10	5.50	0.05K	0.94	30.0K	2K	2K		120K
MEAN		1159	8.2	6.74	6.95	0.06	4.71	55.7	9	3		1375
LOG MEAN		362	8.2	5.21	6.75	0.06	3.80	51.0	5	3		466
750712												

STATION - FF-W-006 WELL AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	38260 MBAS MG/L	00940 CHLORIDE CL MG/L
750220	1200	2000	8.0	2.70	3.00		0.18	20.0	4	3K		88
750220	1735	2000	8.1	2.90	3.35		0.17	21.0	150	3K		83
750324		37	8.5	2.00	3.40	0.05K	0.20	30.0K	3K	3K	0.1K	100
750422		37		1.70	3.60	0.05K	0.20	100.0	3K	3K		
750520		37							3K	3K		
750623		37							3K	3K		
750711	1030	2000		3.72	4.56	0.01K	0.06	15.0				60
750711	1150	2000							33	2K		
750711	1710	2000							8	2K		
750712	0900	2000		2.85	3.10	0.01K	0.05	14.0				50
750712	1208	2000							17	2		
750712	1805	2000							7	5		
750220												
	NUMBER	12	3	6	6	4	6	6	10	10	1	5
	MAXIMUM	2000	8.5	3.72	4.56	0.05K	0.20	100.0	150	5		100
	MINIMUM	37	8.0	1.70	3.00	0.01K	0.05	14.0K	3K	2K		50
	MEAN	1346	8.2	2.64	3.50	0.03	0.14	33.3	23	3		76
	LOG MEAN	529	8.2	2.56	3.47	0.02	0.12	25.3	8	.3		74
750712												

STATION - FF-W-007 WELL AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1115	2000	7.8	11.00	11.00		0.96	24.0	3K	3K	1300
750220	1705	2000	7.4	10.00	11.20		4.10	30.0	3K	3K	1500
750324		37	7.7	9.20	11.00	0.05K	0.96	30.0K	3K	3K	1400
750422		37	7.8					24.0	4	3K	3500
750520		37	7.8						3K	3K	1000
750623		37							3K	3K	
750711	1000	2000		9.40	10.70	0.01K	0.95	34.0			1800
750711	1133	2000							23	2K	
750711	1648	2000							8	2K	
750712	0930	2000		10.10	10.00	0.03	1.61	52.0			1700
750712	1145	2000							2	2K	
750712	1745	2000							2	2K	
750220											
	NUMBER	12	5	5	5	3	5	6	10	10	7
	MAXIMUM	2000	7.8	11.00	11.20	0.05	4.10	52.0	23	3K	3500
	MINIMUM	37	7.4	9.20	10.00	0.01K	0.95	24.0K	2K	2K	1000
	MEAN	1346	7.7	9.94	10.78	0.03	1.72	32.3	5	3	1743
	LOG MEAN	529	7.7	9.92	10.77	0.02	1.42	31.2	4	3	1620
750712											

STATION - FF-W-007C CANAL ADJACENT WELL NO. 7 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	0900	2000	0.06	0.25	0.01K	0.05	3.6	18400
750712	0830		0.06	0.25	0.01K	0.15	3.6	17500
750711								
NUMBER		1	2	2	2	2	2	2
MAXIMUM			0.06	0.25	0.01K	0.15	3.6	18400
MINIMUM			0.06	0.25	0.01K	0.05	3.6	17500
MEAN			0.06	0.25	0.01	0.10	3.6	17950
LOG MEAN			0.06	0.25	0.01	0.09	3.6	17944
750712								

STATION - FF-W-008 WELL AT SURF CITY N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	38260 MBAS MG/L	00940 CHLORIDE CL MG/L
750220	1200	2000	7.9	13.00	13.00		2.00	13.0	3K	3K		47
750220	1735	2000	7.6	10.40	10.50		2.00	11.7	3K	3K		47
750324		37	8.2	12.00	12.00	0.05K	2.60	57.8	3K	3K	0.1	46
750422		37	8.2	14.00	17.00	0.05K	6.90		4	3K		500
750520		37	8.2						3K	3K		1000K
750623		37							3K	3K		
750711	1000	2000		9.50	10.30	0.01K	2.00	8.5				32
750711	1141	2000							130	2K		
750711	1700	2000							13	2K		
750712	0930	2000		4.84	4.90	0.01K	1.16	16.0				34
750712	1200	2000							13	2K		
750712	1755	2000							2K	2K		
750220												
NUMBER		12	5	6	6	4	6	5	10	10	1	7
MAXIMUM		2000	8.2	14.00	17.00	0.05K	6.90	57.8	130	3K		500
MINIMUM		37	7.6	4.84	4.90	0.01K	1.16	8.5	2K	2K		32K
MEAN		1346	8.0	10.62	11.28	0.03	2.78	21.2	18	3		244
LOG MEAN		529	8.0	10.07	10.58	0.02	2.35	16.4	6	3		92
750712												

SURF CITY

STATION - FF-W-008C CANAL ADJACENT WELL NO. 8 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	0930	2000	0.42	2.16	0.01K	0.19	5.3	17400
750712	0900	2000	0.06	0.38	0.01	0.11	4.1	17500
750711								
NUMBER		2	2	2	2	2	2	2
MAXIMUM		2000	0.42	2.16	0.01	0.19	5.3	17500
MINIMUM		2000	0.06	0.38	0.01K	0.11	4.1	17400
MEAN		2000	0.24	1.27	0.01	0.15	4.7	17450
LOG MEAN		2000	0.16	0.91	0.01	0.14	4.7	17450
750712								

STATION - FF-W-009 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1217	2000	7.3	19.00	19.00	1.10	17.0	7	4	170
750220	1745	2000	7.9	17.70	18.10	0.96	14.1	15	15	190
750324		37						3K	3K	
750422		37						4	3K	
750520		37						3	3K	
750623		37						4	3K	
750711	1145	2000						79	2K	
750711	1705	2000						13	2K	
750712	1203	2000						2	2K	
750712	1800	2000						2K	2K	
750220										
NUMBER		10	2	2	2	2	2	10	10	2
MAXIMUM		2000	7.9	19.00	19.00	1.10	17.0	79	15	190
MINIMUM		37	7.3	17.70	18.10	0.96	14.1	2K	2K	170
MEAN		1215	7.6	18.35	18.55	1.03	15.5	13	4	180
LOG MEAN		405	7.6	18.34	18.54	1.03	15.5	6	3	180
750712										

STATION - FF-W-010 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1145	2000	8.0	14.00	14.00	3.40	18.0	3K	3K	54
750220	1720	2000	7.7	11.70	12.65	3.60	14.8	3K	3K	54
750324		37						3K	3K	
750422		37						3K	3K	
750520		37						9	3K	
750623		37						4	3K	
750711	1135	2000						5	2K	
750711	1655	2000						2K	2K	
750712	1155	2000						2K	2K	
750712	1750	2000						2K	2K	
750220										
NUMBER		10	2	2	2	2	2	10	10	2
MAXIMUM		2000	8.0	14.00	14.00	3.60	18.0	9	3K	54
MINIMUM		37	7.7	11.70	12.65	3.40	14.8	2K	2K	54
MEAN		1215	7.8	12.85	13.32	3.50	16.4	4	3	54
LOG MEAN		405	7.8	12.80	13.31	3.50	16.3	3	3	54
750712										

STATION - FF-W-011 WELL AT CANAL NR W.ONSLWO BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1055	2000	7.4	12.00	13.00		2.20	72.0	3K	3K	2300
750220	1645	2000	7.2	11.10	12.52		5.10	47.0	3K	3K	2300
750324		37							3K	3K	
750422		37							210	3K	
750520		37							14	4	
750623		37							3K	3K	
750711	1000	2000		13.20	13.20	0.01K	4.20	37.0			1460
750711	1125	2000							172	2K	
750711	1640	2000							2	2K	
750712	0930	2000		9.50	10.00	0.01K	3.30	27.0			980
750712	1140	2000							2K	2K	
750712	1740	2000							33	2K	
750220											
	NUMBER	12	2	4	4	2	4	4	10	10	4
	MAXIMUM	2000	7.4	13.20	13.20	0.01K	5.10	72.0	210	4	2300
	MINIMUM	37	7.2	9.50	10.00	0.01K	2.20	27.0	2K	2K	980
	MEAN	1346	7.3	11.45	12.18	0.01	3.70	45.8	45	3	1760
	LOG MEAN	529	7.3	11.37	12.11	0.01	3.53	42.9	9	3	1659
750712											

STATION - FF-W-012 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1715	2000	7.3	57.00	57.40		10.90	160.0	3K	3K	4900
750220		2000	7.5	57.00	58.00		12.00	210.0	3K	3K	5200
750324		37							3K	3K	
750520		37							23	3K	
750623		37							3K	3K	
750710	2200	2000				0.24			11	2K	4400
750711	1200	2000							2	2K	
750711	1720	2000				0.08			2K	2K	4400
750712	1100	2000							5	2K	
750712	1215	2000									
750712	1810	2000									
750220											
NUMBER		11	2	2	2	2	2	2	9	9	4
MAXIMUM		2000	7.5	57.00	58.00	0.24	12.00	210.0	23	3K	5200
MINIMUM		37	7.3	57.00	57.40	0.08	10.90	160.0	2K	2K	4400
MEAN		1465	7.4	57.00	57.70	0.16	11.45	185.0	6	3	4725
LOG MEAN		674	7.4	57.00	57.70	0.14	11.44	183.3	4	3	4713
750712											

STATION - FF-W-013 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	38260 MBAS MG/L	00940 CHLORIDE CL MG/L
750220	1055	2000	7.0	23.00	25.00		5.00	54.0	3K	3K		6500
750220	1655	2000	7.2		26.00		6.80	65.0	3K	3K		6900
750324		37	7.4		38.00	0.05K	4.70	32.0	3K	3K	0.1K	6000
750422		37	8.5	0.50	4.60	0.67	6.50	47.0	4	3K		500
750520		37	7.8						3K	3K		3750
750623		37							23	3K		
750711	0900	2000		20.00	20.50	0.18	3.80	14.0				7800
750711	1215	2000							2K	2K		
750711	1725	2000							2K	2K		
750712	1030	2000										
750712	1220	2000							2K	2K		
750712	1615	2000							2K	2K		
750220												
NUMBER		12	5	3	5	3	5	5	10	10	1	6
MAXIMUM		2000	8.5	23.00	38.00	0.67	6.80	65.0	23	3K		7800
MINIMUM		37	7.0	0.50	4.60	0.05K	3.80	14.0	2K	2K		500
MEAN		1346	7.6	14.50	22.82	0.30	5.36	42.4	5	3		5242
LOG MEAN		529	7.6	6.13	18.77	0.18	5.24	37.5	3	3		3973
750712												

STATION - FF-W-013C CANAL ADJACENT WELL NO. 13 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	0800	2000	0.06	1.52	0.01K	0.17	6.0	17200
750712	0930	2000	0.08	0.55	0.01K	0.14	5.7	17400
750711								
NUMBER		2	2	2	2	2	2	2
MAXIMUM		2000	0.08	1.52	0.01K	0.17	6.0	17400
MINIMUM		2000	0.06	0.55	0.01K	0.14	5.7	17200
MEAN		2000	0.07	1.03	0.01	0.15	5.8	17300
LOG MEAN		2000	0.07	0.91	0.01	0.15	5.8	17300
750712								

STATION - FF-W-014 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	1030	2000	7.5	7.20	8.60		0.35	23.0	3K	3K	1600
750220	1640	2000	7.1	8.60	9.42		0.38	18.0	3K	3K	1700
750324		37							3K	3K	
750422		37							4	3K	
750520		37							7	3K	
750711	0900	2000		20.00	20.00	0.01K	1.51	22.0			2560
750711	1220	2000							49	2K	
750711	1730	2000							5	2K	
750712	0930	2000									
750712	1227	2000							2K	2K	
750712	1620	2000							49	2	
750220											
NUMBER		11	2	3	3	1	3	3	9	9	3
MAXIMUM		2000	7.5	20.00	20.00		1.51	23.0	49	3	2560
MINIMUM		37	7.1	7.20	8.60		0.35	18.0	2K	2K	1600
MEAN		1465	7.3	11.93	12.67		0.75	21.0	14	3	1953
LOG MEAN		674	7.3	10.74	11.75		0.59	20.9	6	3	1910
750712											

STATION - FF-W-014C CANAL ADJACENT WELL NO. 14 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	0900	2000	0.06	0.38	0.01K	0.05	4.1	17200
750711								
	NUMBER	1	1	1	1	1	1	1
	MAXIMUM							
	MINIMUM							
	MEAN							
	LOG MEAN							
750711								

STATION - FF-W-015 WELL AT CANAL NR W.ONSLOW BEACH N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00400 PH SU	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750220	0957	2000	6.7	8.10	9.38		0.59	17.2	3K	3K	7700
750220	1625	2000	7.0	8.40	9.22		0.51	14.0	3K	3K	7700
750324		37							4	4	
750520		37							3K	3K	
750623		37							3K	3K	
750711	0830	2000		8.20	9.45	0.01	0.68	17.0			5400
750711	1230	2000							2	2K	
750711	1740	2000							2	2K	
750712	0930	2000		8.50	10.50	0.01K	1.07	37.0			5350
750712	1230	2000							2K	2K	
750712	1630	2000							2K	2K	
750220											
NUMBER		11	2	4	4	2	4	4	9	9	4
MAXIMUM		2000	7.0	8.50	10.50	0.01	1.07	37.0	4	4	7700
MINIMUM		37	6.7	8.10	9.22	0.01K	0.51	14.0	2K	2K	5350
MEAN		1465	6.8	8.30	9.62	0.01	0.71	21.3	3	3	6538
LOG MEAN		674	6.8	8.30	9.60	0.01	0.68	19.7	3	3	6433
750712											

STATION - FF-W-015C CANAL ADJACENT WELL NO. 15 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	00940 CHLORIDE CL MG/L
750711	0830	2000	0.06	0.35	0.01K	0.06	4.3	17200
750712	0830	2000	0.10	0.35	0.01K	0.08	4.1	17400
750711								
NUMBER		2	2	2	2	2	2	2
MAXIMUM		2000	0.10	0.35	0.01K	0.08	4.3	17400
MINIMUM		2000	0.06	0.35	0.01K	0.06	4.1	17200
MEAN		2000	0.08	0.35	0.01	0.07	4.2	17300
LOG MEAN		2000	0.08	0.35	0.01	0.07	4.2	17300
750712								

STATION - FF-HR-STP KINGS CK-EFF FRM HOLLY RIDGE, NC N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750711	1100	2000						9200000	1300000
750711	1850	2000	4.00	5.65	0.05	4.70	64.0	9200000	2210000
750711									
	NUMBER	2	1	1	1	1	1	2	2
	MAXIMUM	2000						9200000	2210000
	MINIMUM	2000						9200000	1300000
	MEAN	2000						9200000	1755000
	LOG MEAN	2000						9199997	1694987
750711									

STATION - FF-HR-BP KINGS CK-SEWAGE BYPASS FRM HR.NC N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00027 COLLECT AGENCY CODE	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750711	1845	2000	4.10	6.80	0.02	3.00	38.0	13000000	790000
750711									
	NUMBER	1	1	1	1	1	1	1	1
	MAXIMUM								
	MINIMUM								
	MEAN								
	LOG MEAN								
750711									

STATION - FF-KC KINGS CK-AT STATE ROAD 1534 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00480 SALINITY PPTH	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750711	1200	24.5	2000	0.0	0.23	0.42	1.25	0.89	13.3	49000	7000	
750712	1825		2000		0.30	0.77	1.61	0.70	12.5	49000	13000	23
750711												
NUMBER		1	2	1	2	2	2	2	2	2	2	1
MAXIMUM			2000		0.30	0.77	1.61	0.89	13.3	49000	13000	
MINIMUM			2000		0.23	0.42	1.25	0.70	12.5	49000	7000	
MEAN			2000		0.26	0.59	1.43	0.79	12.9	49000	10000	
LOG MEAN			2000		0.26	0.57	1.42	0.79	12.9	49000	9539	
750712												

STATION - FF-CC CYPRESS CK-AT STATE ROAD 1540 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00480 SALINITY PPTH	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML	00940 CHLORIDE CL MG/L
750711	1150	25.4	2000	0.8	0.29	7.55	0.50	25.60	14.3	240000	7900	
750712	1850		2000		15.20	18.40	0.49	25.00	13.8	2400000L	542000	389
750711												
	NUMBER	1	2	1	2	2	2	2	2	2	2	1
	MAXIMUM		2000		15.20	18.40	0.50	25.60	14.3	2400000L	542000	
	MINIMUM		2000		0.29	7.55	0.49	25.00	13.8	240000	7900	
	MEAN		2000		7.74	12.97	0.49	25.30	14.0	1320000	274950	
	LOG MEAN		2000		2.10	11.79	0.49	25.30	14.0	758942	65435	
750712												

STATION - FF-GS CYPRESS CK-AT GREEN ST IN MR, NC N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	00010 WATER TEMP CENT	00027 COLLECT AGENCY CODE	00480 SALINITY PPTH	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00665 PHOS-TOT MG/L P	00680 T ORG C C MG/L	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECHED /100ML
750711	1215	24.8	2000	3.1	7.20	36.00	9.05	149.00	360.0	2400000L	1600000
750712	1900		2000		6.70	19.20	0.54	99.00	1800.0	2400000L	2400000L
750711											
NUMBER		1	2	1	2	2	2	2	2	2	2
MAXIMUM			2000		7.20	36.00	9.05	149.00	1800.0	2400000L	2400000L
MINIMUM			2000		6.70	19.20	0.54	99.00	360.0	2400000L	1600000
MEAN			2000		6.95	28.00	2.79	124.00	1080.0	2400000	2000000
LOG MEAN			2000		6.95	26.58	1.66	121.45	805.0	2399999	1959585
750712											

STATION - FF-W-08-POND SURF CTY-PONDING NR WELL # 8 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	0930	2400000L	2400000L
750712	1340	240000L	240000L
750712			
	NUMBER	2	2
	MAXIMUM	2400000L	2400000L
	MINIMUM	240000L	240000L
	MEAN	1320000	1320000
	LOG MEAN	758942	758942
750712			

SURF CITY

STATION - FF-W-08C-DYE SURF CTY-CANAL NR WELL # 8 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1340	34800	2300
750712			
	NUMBER	1	1
	MAXIMUM		
	MINIMUM		
	MEAN		
	LOG MEAN		
750712			

STATION - FF-W-13-POND SURF CTY-PONDING NR WELL # 13 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1040	221000	2210
750712	1400	14100	1300
750712			
	NUMBER	2	2
	MAXIMUM	221000	2210
	MINIMUM	14100	1300
	MEAN	117550	1755
	LOG MEAN	55822	1695
750712			

SURF CITY

STATION - FF-W-13C-DYE SURF CTY-CANAL NR WELL # 13 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPN [illegible]CMED /100ML
750712	1400	92000	13000
750712			
	NUMBER	1	1
	MAXIMUM		
	MINIMUM		
	MEAN		
	LOG MEAN		
750712			

STATION - FF-W-14-POND SURF CTY-PONDING NR WELL # 14 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1620	240000L	92000
750712			
	NUMBER	1	1
	MAXIMUM		
	MINIMUM		
	MEAN		
	LOG MEAN		
750712			

SURF CITY

STATION - FF-W-14C-DYE SURF CTY-CANAL NR WELL # 14 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1620	22100	330
750712			
	NUMBER	1	1
	MAXIMUM		
	MINIMUM		
	MEAN		
	LOG MEAN		
750712			

STATION - FF-W-15-POND SURF CTY-PONDING NR WELL # 15 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1030	109000	490
750712	1605	22100	460
750712			
NUMBER		2	2
MAXIMUM		109000	490
MINIMUM		22100	460
MEAN		65550	475
LOG MEAN		49080	475
750712			

SURF CITY

STATION - FF-W-15C-DYE SURF CTY-CANAL NR WELL # 15 N.C.COASTAL AREA FINGER FILL CANAL STUDY

DATE	TIME	31505 TOT COLI MPN CONF /100ML	31615 FEC COLI MPNECMED /100ML
750712	1605	240000L	1750
750712			
	NUMBER	1	1
	MAXIMUM		
	MINIMUM		
	MEAN		
	LOG MEAN		
750712			